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FOUR IMPORTANT CONVENTIONS.

Commencing with May 25th, the plumbers and steam-fitters will have an opportunity of participating in four of the most important conventions of the year.

The American Society of Heating and Ventilating Engineers.

The first is the summer meeting of the American Society of Heating and Ventilating Engineers, whose date, so far as known, is assigned to May 25, 26 and 27. There are strong hopes that sufficient numbers may be obtained to warrant holding the convention in Chicago. Chicago, however, will only be the starting and terminal points of the trip, it being proposed to charter a steamer, the convention being held on board during a tour from Chicago to Manitowoc and back. Failing the required number of 200, it is probable that Cleveland will be selected as a meeting-place. The growth of the society has been phenomenal, and its recent important step of securing headquarters in the Engineering Societies' building, New York City, will still further advance its facilities for expansion. The heating and ventilating engineers throughout the country are cordially invited to become acquainted with the character and scope of the organization at this summer meeting. Final arrangements as to hotel headquarters and meeting-place will probably be announced in our next issue.

The National Association of Master Steam and Hot-Water Fitters.

May 29, 30, 31 and June 1, the 23rd annual convention of the Master Steam and Hot-Water Fitters will be held in Chicago, with headquarters at the Hotel Sherman. The association has for many years held its meeting in the East, and its meeting in the Central West at this time has been determined with the specific object of strengthening the western membership and inducing steam-fitters of this territory to add to the associational strength by their membership. An instructive and elaborate program has been arranged, combining profit and pleasure, and Henry B. Gombers, the aggressive secretary of the organization, is enthusiastic as to

the outcome of the meeting. Chicago is the center of many heating interests, the excellent railroad facilities offering an easy opportunity for those engaged in the steam and hot-water heating industries to gather in the national convention.

The National District Heating Association.

The National District Heating Association will hold its third annual meeting at Pittsburg June 6, 7 and 8, with headquarters at the Fort Pitt Hotel. D. C. Gaskill, secretary of the organization, recently visited the "Domestic Engineering" office, and stated that there was every indication of the meeting being a record one in point of attendance and interest. District-heating plants are making steady headway in every part of the United States. Many of our readers in both plumbing and steam-fitting lines will find occasion to become conversant with some of the chief points of interest in district steam and hot-water heating problems, and will benefit therefore by a careful reading of our report of this convention's proceedings. This association has increased in membership in a most gratifying way, and its work and that of the American Society of Heating and Ventilating Engineers, are helping to place the heating and ventilating interests among the most important industries in the country.

The National Association of Master Plumbers.

Probably the convention which is engaging most of the interest of our readers at the present time is that of the National Association of Master Plumbers of the United States, which will take place on June 13, 14 and 15 at Galveston, Tex. This will be the 29th meeting of the association, which has probably the largest membership of any organization in the United States. The headquarters of the convention will be at the Tremont Hotel. Special space has been reserved for manufacturers' exhibits, and any of our advertisers and readers who desire space and have not yet reserved it, should communicate immediately with C. H. Diercks, Chairman of Exhibits, Galveston, Tex.

Galveston is within comparatively easy reach. One can get there nearly as quickly from Chicago as one can reach New York. The expense will be very little more, as a special rate has been made of $46.25 for the round trip. A pleasant opportunity is afforded for plumbers to forget the worries and cares of their local affairs, broaden their vision in sanitary matters, and acquire a fresh zest for conducting a profitable business along legitimate lines. It is no use saying "the expense is too great." Many a plumber who says this has lost ten times the amount on his bad contracts, and thought he was "real smart" in doing it. Attendance at such a convention will give him a fresh grip on the essentials of doing business with a profit. The objection that time cannot be spared can also be disposed of in as simple a manner. It would do a whole lot of plumbing businesses a lot of good if their operators could be separated from them for a couple of weeks each year. Things would look different on the owner's return. New ideas would have been obtained, and the respective industries would take on new and vigorous life.

Whatever convention you are most interested in, make up your mind now to attend it. The trip to Texas will be a revelation to many of those who have not yet learned how to combine work with enjoyment.

NEW BUSINESS VENTURES.

Meridian, Miss.—The Briggs-Spinks Plumbing Co. has been incorporated with a capital of $10,000. The incorporators are R. W. Briggs and E. A. Spinks.

Gary, Ind.—The White City Plumbing Co. is the name of a new concern which is just starting in business at 1062 Broadway. The company is composed of J. C. Clemens and J. Lord.

Zanesville, O.—The Miller-Sode Plumbing Co. has been incorporated with a capital stock of $10,000, the incorporators being August J. Miller, Charles O. Sode, C. E. Sode, B. Miller and E. E. Miller. The company will enlarge its business and remain at its present location at the corner of Seventh street and Elberon avenue.

Waterloo, Ia.—The Frush Plumbing Co. has been incorporated with a capital of $25,000. The officers of the company are: President, George H. Frush; vice-president, Wm. J. Cosgrove; secretary, Stephen Mullany; treasurer, G. D. Bertram.

Murphysboro, Ill.—Parker & Carey is the style of a new firm which has just opened a plumbing and heating establishment here.

SOME TIPS FOR THE TRADE.

Albion, Mich.—Elton B. Spears has purchased the business of George Griffin and will make a specialty of furnace and heating lines.

Roanoke, Ill.—A plumbing and heating business is to be conducted by E. Herbst & Co., who have recently purchased the business of Altorfer & Co.

Yoakum, Tex.—L. B. Moore & Sons are erecting a new store and when it is completed they will make a specialty of plumbing work and will deal in supplies.

Perrysburg, O.—The J. Davis Hardware Co. has been formed here with $5,000 capital stock and will make a feature of plumbing, gas-fitting and hot-water heating supplies.

Gothenburg, Neb.—The Gothenburg Hardware Co., which has just opened a new store, will feature plumbing supplies, catalogs of which are urgently requested.

Streator, Ill.—Powers & Williams, wholesale and retail, will make a feature of heating appliances when their new building is completed.

Philadelphia, Pa.—The Kinkerter & Sheppard Co., in their new store at 4649 Frankford Ave., are devoting considerable space to displaying various styles of bath-room fixtures. The booth plan of display has been generally followed throughout the new establishment.

Sidney, Neb.—M. Ramella has purchased Closman & Son's plumbing business and will continue it at the old stand near the postoffice.

Idagrove, Ia.—William Mitchell has sold his interest in the Mitchell & Simpson plumbing and hardware business and the firm name has been changed to Simpson & Van Dohren.

Columbus, O.—Bids for the plumbing and heating system of the Marion School, which were opened recently, were: Probst Bros., Columbus, $2,996.90; Cunningham, $2,838.34; Hildreth & Pace, Columbus, $3,138; The Columbus Heating & Ventilating Co., Columbus, $3,496.

SETTING AND FITTING UP BOILERS.

By Phoenix.

Chapter V.

The Fitter's Final Duties Regarding the Boiler.

After the asbestos has been successfully applied to the boiler, the fittings, smoke-pipe, and the pipe-covering attended to, the iron work of the boiler should be painted. An asphaltum paint is generally used for this purpose. In covering the smoke-pipe (where it is designed to make use of the powdered asbestos) it would be well to wind the smoke-pipe with some wire-netting, as it will assist in holding the asbestos in place.

The fittings, likewise, should not be covered until the pipe-covering has all been put on, in case the loose asbestos is used. Many fitters seem to consider that, when the job has arrived at this stage, their responsibility in the matter has ceased and about all they have to do is to pack up their "kit" and pull out for the next place.

This is a mistake and from the result of such conduct many very unpleasant things are liable to happen for both the fitter and the shop for which he is working. The average householder who has never managed a steam or hot-water job does not have a first-class idea of what the apparatus is going to do and he (or she) will make all kinds of fool plays with the new toy, unless put wise before the mechanic leaves the job, with the result that some one from the shop will have to go to the plant and give a course of instruction or, perhaps, repair some damages that might have been easily avoided.

Hence, for the last two days or so it is a mighty desirable thing for the fitter to have the person who is to manage the apparatus hang around and soak up a little knowledge of how things are going to be run, when the plant begins to get in its action.

I fully realize that, in some cases, this is a mighty big strain on the nervous system and that a few of these customers are about as agreeable as the ten plagues of Egypt to have around; but in such a case I figured that it was better to have it all done up at one time and then there was no worst to come afterward.

Fix up a place to hang the firing tools. Nine out of ten householders will never attend to the matter and then it will soon be a case of "kick" to the shop and the assertion made that the firing tools were never furnished at all. It simply means that you will have to drive a few nails in some convenient place and call this matter to the attention of the owner.

There comes with the boiler a printed set of directions for the running of the boiler. Do not throw these away as useless (as I have seen done many times) but nail these directions up in some very conspicuous place, bringing the matter to the attention of the owner. Don't give him the directions for he will be nearly certain to lose or mislay them. I have always considered that it was the fitter's duty to give instructions as to the running of the job. He is there all the time and has the chance to become well acquainted with the owner and the boss's time is too valuable to be spent in this manner anyway. There are many points that can be easily given and in a manner that any person can quickly get next to. Besides, the fitter has the chance of demonstrating the points, as both the apparatus and the person are on the spot, the same not being true in case the owner has to go to the shop for information.

In giving this instruction I would impart the following as some of the important points:

1. Show them how to get the water both into and out of the system.

2. Prove that because a boiler "sweats" it does not leak.

3. Make them hold up both hands and stand on one foot and swear solemnly that they will clean out the ash-pit every morning.

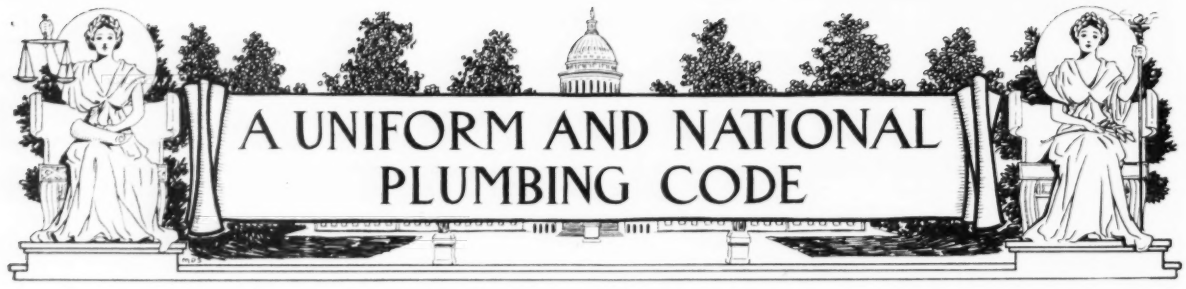
4. Teach them how to put in a fire that will carry the apparatus for several hours. The average householder expects (at first) that the new job is not going to burn as much fuel as a small coal-stove. Indeed, he trusts the boiler to run principally on faith. It is up to you to undeceive him in this respect right at the start. If you don't, there will sure be a kick coming in to the boss soon about the awful amount of coal that the boiler burns.

5. If it's a steam job, you will show them just how much water to carry in the water-glass in order to get the best results. You should have found this out for yourself when testing out during the two or three days that you ran the job.

6. If a hot-water job, you will explain about the expansion tank, the altitude-gage, and that the radiators must not contain air, if good results are to be expected.

7. Lastly, throw them upon their common-sense. Show them that it is easier to run a steam or hot-water plant than a coal-stove.

Behold, the comet Galvestonis! It will reach its zenith on June 13th and will be seen to best advantage from "The Oleander City." Its rays will surround the observers with Southern hospitality. Its tale of glory will be published in full in our convention-issue. Watch its rise and pack your grip for the "Galvention."



By Henry D. McCormack, C. E.

XII.

Materials for the Drainage System.

The materials of which drainage systems are composed have been changed from time to time as conditions necessitated a change, and we have by no means as yet discovered and adopted the ideal material for this purpose. Originally lead soil-pipe was exclusively used. With the increase in size of buildings, however, lead soil-pipe to a certain extent was found wanting, and a material was required having greater strength and rigidity so it would not settle or sag from its own weight, and would be less liable to damage than lead soil-pipe, even though it lacks some of the excellent qualities of lead for other purposes. Cast-iron pipe thus came into vogue, and at the present time may be considered the standard material for small works. But with the advent of extremely tall buildings, cast-iron hub-and-spigot pipe was found wanting. The settlement of stacks pulled the joints apart at the hubs, or in case of lesser settlements started them enough to force the lead calking part way out of the hubs, thereby starting a number of leaks, which, on account of the spigots extending down into the hubs, would not leak water although they would allow drain-air to pour out freely into the rooms. Settlement of the building, on the other hand, or shrinkage of the floor beams, forced the numerous joints to "give," thereby loosening the calking, and starting numerous leaks. With the old system of cast-iron soil, waste and vent stacks, with lead roughing under the floor and lead vent pipes in the partitions, there was a certain amount of settlement, shrinkage and other movements provided for, but, about 15 years ago, a movement set in towards wrought pipe vent branches calked securely into hubs of the soil, waste and vent stacks, and resting in notches cut in wooden partitions or bedded in fireproof walls and partitions. This rigid method of construction made no provision for movement of the stacks or buildings, and the result has been many broken pipes, joints and fittings, which never obtained before. The lead pipe when used for this purpose would yield sufficiently to prevent damage, while iron pipe of any kind, of course, is unyielding. The next step was to substitute wrought pipe for cast-iron hub-and-spigot pipe, on account of the greater strength of the wrought pipe, and the less danger of the system yielding at the joints. Here, however, what was gained in strength was lost in durability, for wrought pipe will not last as long as will either cast-iron or lead pipe.

The ideal pipe for drainage systems would be a nickel steel or some other non-corrosive material with similar fittings made up with screw threads, and not only as strong as wrought pipe but durable as either cast-iron or lead pipe. Such a pipe with the fittings would of course cost more than any pipe now on the market, but at that would be cheaper when the greater length of life is considered. Perhaps, if this necessity in plumbing practice were given greater publicity, we would not have long to wait for a supply to the demand. At the present, however, we must construct our drainage systems from the materials which are available.

In considering the materials for a plumbing code, then, we ought to consider not only the cheapness and availability of the pipe and fittings at hand, but likewise the length of life and suitability of the several materials. In this connection let us consider which is the better material for the roughing-in of toilet rooms in ordinary buildings; whether wrought pipe or lead pipe is the more suitable for this purpose. Lead vent pipes, once they are properly installed, will last for centuries, and while in use, on account of their yielding nature, will "give" when a settlement, shrinkage or temperature change occurs. Once properly installed, it can be considered perfectly safe thereafter for an indefinite length of time. Wrought pipe, on the other hand, will corrode through in a comparatively short space of time, while in many cases the joints or fittings are broken by settlements, shrinkages and temperature changes. As these pipes are concealed behind plastered, and in some cases tiled walls, it means a great expense to repair them. While at their best we must consider that wrought pipes deteriorate at the rate of over 10 per cent per annum, whereas lead pipe in the same capacity will not deteriorate at a rate greater than 1 or .05 per cent per annum.

This is such an important element entering into the makeup of a plumbing system, that "Domestic Engineering" would be glad to hear from those who have had such cases in their own experience. We would like to hear both sides of the question, with sketches or photographs if possible, explaining just what caused the failure, and whether it was lead or iron pipe that failed.

In considering the question, if a lead pipe fails on account of being improperly supported, or on account of having nails driven through it, the failure must be considered that of the workmen in not doing their work properly, not of the material which was improperly used or handled.

Some movement will sooner or later have to be made towards improving the quality of the pipe used for large buildings, and the more data we can now gather on the subject, the better will it be when compiling our National and Uniform Plumbing Code.

We have not mentioned either brass or copper pipes as possible materials for drainage systems, not because they are not suitable nor available, but because of their prohibitive cost for large sizes, and the further reason that we believe a good heavy suitable pipe can be manufactured at a more reasonable cost. Copper pipes of lighter weights than corresponding sizes of iron pipes might be found suitable for most cities, combining as they do both strength and lightness, and these pipes would not be prohibitive in their cost.

Fittings for Stacks and Branches.

The first requirement for soil and waste fittings for the stacks and branches, and one which is quite generally adhered to in practice at the present time, is that they all

be "flush fittings" or, in other words, fittings which are flush inside with the inside of the pipe, and leave no recesses or pockets for the retention of sewage or the obstruction of its flow. The recess drainage fittings used with the wrought pipe system of plumbing belong to this class, as do likewise the ordinary cast-iron hub-and-spigot soil-pipe fittings used with ordinary soil-pipe.

The second requirement for fittings is that they correspond in weight and quality with the grades of pipe with which they are to be used, and that they be of standard sizes.

The third requirement has relation to their designs or shapes. In the designing of fittings there is considerable latitude so far as location and number of openings are concerned, so long as they comply with or conform to certain principles of design. All inlets to a fitting should be at an angle of less than 70 deg. in the direction of flow, and when curved, as in case of TY fittings, should have a decided curvature, and not like many so-called TY fittings, be practically T fittings. On the vertical stacks of pipe, as it is necessary to economize space in order to keep the roughing-in close to the wall, shorter curve TY's and smaller fittings of all kinds may be permitted than in the horizontal runs of the house drains; however, this liberty to limit the curvature or size should not be construed as a license to make them practically ordinary steam fittings.

There will be but little difference of opinon among framers of codes as to the class of fittings to be used for soil and waste pipes, but there is chance for a disagreement when it comes to the vent-pipes. Heretofore, the use of ordinary steam and water fittings has been sanctioned in connection with the ventilation system, because nothing but air is supposed to flow through the vent-pipes, and a pocket in the fittings will not retain as it would in the waste pipes, while at the same time air can flow with sufficient ease for all ordinary purposes through ordinary square fittings. So far, so good. The practice which has been followed in the past will be found all right for ordinary and small installments, but when it comes to buildings 20 and 30 stories in height, with batteries of closets on each floor rising tier above tier, there will be a tremendous circulation of air through the vent system when the closets are in use, and if too great resistance is offered to this flow of air, a pressure is liable to be created within the system, great enough to force bubbles of air through the water in the closet traps on some of the floors. In this class of buildings, then, it would be well to require flush fittings of easy curves in the vent system as well as in the soil and waste pipes.

Of course, such a provision would apply only to the very large cities. For the small and medium size cities the practice now followed will be found all-sufficient.

(To be continued.)

MASSACHUSETTS MASTER PLUMBERS' ANNUAL MEETING.

The Massachusetts Master Plumbers' Association held its annual convention in Boston on Wednesday, May 10th, with a good attendance. Routine matters were attended to and the meeting was a pleasant success in every respect. The following officers were elected for the ensuing year: President, Richard J. Welch, Lowell; vice-president, John S. Cassidy, Boston; treasurer, O. S. Kendall, Worcester; secretary, John J. Vogel, Boston. John P. Drury, who has served the association as secretary for the past seven years, resigned from that office owing to the fact that he has closed out his plumbing business and accepted a position as plumbing salesman.

WASHINGTON MASTER PLUMBERS HOLD ANNUAL CONVENTION.

The annual meeting of the Washington State Association of Master Plumbers was held at the Tacoma Hotel, Tacoma, on April 21st and 22d. About 80 delegates were present when President Ayers called the convention to order on Friday morning. The first day's sessions were devoted to the usual routine business, the appointment of committees, the consideration of various resolutions, upon which reports were made later, and the annual reports of President Ayers and Secretary Roland. The greater portion of the second day's sessions were executive, and an important change was made in the by-laws regarding the executive committee and the secretary. Instead of being elected, as heretofore, they will be appointed by the president, and the secretary will be an organizing official with salary and expenses. In addition to looking after the interests of Washington plumbers, the secretary is to extend his field of operations into Oregon, on the invitation of the Oregon Association, assisting the plumbers there to secure better organization. The plumbers in Oregon are to bear their share of the additional expense involved. The secretary is also to arbitrate all difficulties between members of the association, and between members and the various jobbing houses. It was also decided that the interests of all plumbers in the territory would be best served by the formation of a Pacific Coast Master Plumbers' league, and the delegates chosen to represent Washington at the national convention were instructed to do everything possible to secure this. The following officers were elected: President, M. Isbister, Spokane; vice-president, P. J. Lavan, Seattle; treasurer, E. V. Lambert, Spokane. This is Mr. Lambert's eighth successive election as treasurer. President Isbister announced his appointments as follows: Secretary, J. F. Meagher, Spokane; members of the executive committee: A. E. Ayers and P. J. Lavan, Seattle; J. Griggs, Tacoma; C. A. Healy and W. W. Strong, Everett; James Smyth, Spokane; W. A. Bell, North Yakima; state organizer, James Smyth, Spokane. The delegates to the national convention at Galveston are President Isbister and Treasurer Lambert, and T. H. Bellingham, Tacoma. Spokane was selected for the next convention, which is to be held during the second week in April, 1912.

The convention closed its labors on Saturday evening with a banquet in the Viking room of the Tacoma Hotel, at which over 100 guests were present. James Griggs, Tacoma, was toastmaster, and among those who responded were the retiring president, vice-president and secretary, A. E. Ayers of Seattle, John Sarginson of Spokane and John G. Roland of Seattle; the new president and secretary, M. Isbister and J. F. Meagher, both of Spokane; Treasurer Lambert, Spokane; James Beggs, Portland; C. E. Pinkney, Aberdeen; Wm. Eckart, Seattle, and E. J. Walsh, Tacoma.

Many of the delegates were accompanied by their wives. On Friday the ladies were entertained at luncheon and taken for an automobile trip around the city, ending with a visit to the Kennel Club bench show. In the evening they attended the Majestic Theater.

"SLIPS ONE OVER" ON PLUMBER.

Mason City, Ia.—Mrs. E. A. Green of this city has gained the reputation of the only one here who has "slipped one over" on a plumber. While at work at her home on a cistern pipe a plumber in the employ of Boyd & Fitzpatrick slipped and fell into the water. Loud calls attracted Mrs. Green, who, with a rope and the help of a neighbor, got the man out, hustled him into a room and furnished him with hot blankets to assist in restoring circulation. The man was then supplied with clothing and after finishing his work, left. The bill returned by the firm for work was $3.76.

Mrs. Green returned a bill for $2 and a check for the balance. The bill, itemized, read:

To socks	$ .25
To use union suit	.50
To bath	.25
To time pulling plumber out of water	1.00
Total	$2.00

BUSINESS MANAGEMENT

NEW METHODS FOR OLD

CUT COSTS, NOT CUT PRICES.

Editor "Domestic Engineering":—Some few years ago, at a meeting in Philadelphia of the credit men engaged in the plumbing business, one of the speakers in an address to the meeting said: "Not 3 per cent of those classified as plumbers are financially rated at $5,000 and not five per cent as worth $5,000," quoting the Mercantile Agencies in support of the statement. I have never heard the truth of this statement questioned and, if true, does it not make you gentlemen of the master plumbers' associations sit up and take notice? I am happy to say that recently many columns of our trade publications have been devoted to an uplift movement and a very considerable effort made in the various state conventions. Now that an awakening to other and safer business methods is so earnestly being sought for, I would suggest that the adoption of a larger cash discount than the regulation 2 per cent would do more to put the retail plumbing business where it should be, than any one other remedy that may be applied. This suggestion is timely and not a radical move, for it is already a custom in some lines other than plumbing, and we have heard of the successful use of it in the plumbing business in local fields. Any proposed plan to alter existing business forms must invite the self-interest of the four factors involved, namely, the manufacturer, the jobber, the master plumber, and the purchasing public, and not only conserve the relative individual equity of present methods but demonstrate the possibility of better things, to enlist their active support and co-operation. Is it possible to accomplish this without a sacrifice of interest upon the part of any of these four? I believe that it is. This ideal of cash business needs no defense, and to prove that the master plumber would avail himself of the opportunity we have only to cite the almost universal acceptance of the discount in the settlement of the electric, gas, and water service company's accounts. Will any of the parties at interest show why this cannot be done? Germ.

DON'T WAIT FOR CALLS BUT DO THE CALLING.

Editor "Domestic Engineering":—About two months ago I read an interesting and vital question to the trade: "What is a man to do when a boom falls flat in a small town?" If there were other towns in close touch in the locality where depression exists the question would solve itself painlessly, avoiding the necessity of severing old ties and creating new.

In an isolated locality a man cannot confine himself strictly to trade lines as a rule, for such a restriction limits the size of the bread and butter but increases the loaf. Should conditions show that work is pretty well cleaned up, then the only thing to do is to clear out, and such occurrences as these explain the entry of the hardware dealer, handy-man, and amateur into the plumbing game.

It also explains to manufacturing interests the necessity of simplying construction and installation. Still, the plumbers can have no kick on that score, considering the majority have for years used the defective but easily installed combination-ferrule.

The only way the trade can control the work after a member of the craft has departed for new fields is to have a repair-wagon route, making calls at certain intervals through rural districts and small towns desiring expert service yet lacking in patronage sufficient for a mechanic to stay on the job and exist. There are many towns in America that require only a repair-wagon and an advance agent, instead a plumbing shop. Such a wagon would hold to the trade the work that belongs to it, answer the wandering desire of the journeyman, and do missionary service in the cause of sanitation.

This idea is not new. In the early days that was the means of supplying the necessities of the settlers—a department store on wheels. The hardware dealer no longer is required to keep store on wheels and the plumber does not realize the advantage to the trade—not necessarily to the highwaymen now because of banking institutions, a convenience lacking in pioneer days. In brief, this letter advocates that plumbers become owners of portable shops. The method of operation would develop in business and mechanical details after the experiment proved a success.

I referred to the journeyman plumber as a missionary in the advancement of sanitation. If the manufacturers of sanitary goods would secure reliable competent mechanics to install plumbing and allied trades in foreign countries as is done in first-class cities of the United States, there would soon be a demand for American plumbing goods, etc., as well as for the American mechanic, but it would be necessary for the manufacturers to finance the deal, not the mechanics. Seg.

WILL TO-MORROW TAKE CARE OF ITSELF?

A young man, possibly about the age of 20, says unto himself, "well, I'm going to study to become a physician." So he starts out and puts in years and years of hard study and perhaps, if he has the cash left or can borrow it, he goes abroad for a few years in order to perfect himself along certain lines. The painter, the musician and some of the students of architecture come up to the same mark. Other professions might be mentioned for which the student spends much time preparing himself for the duties that are to follow.

Now, after he has acquired all that he can, or perhaps enough to enable him to obtain a regular certificate or put on a front sufficient to get some results, has his period of study and self-preparation come to an end? Will the knowledge obtained at the institutions attended give him sufficient mental capital to last for the rest of life? Or does he have to keep reading and studying in order to be posted and to keep in line with the times?

Ask the lawyer if, just as soon as he got out of the school and slung out his shingle, he found that he could quit reading law.

Inquire of the physician as to whether or not he finds it necessary to read his medical journals, in order to avoid getting behind the times. Ask the plumber the

same question and the chances are that at least three out of five will say that they don't have the time to read. How comes it then, that the plumber can get along and break even as time passes and not do any preparing for the future? Isn't there any future to the plumbing business? Does it never advance? Is the plumber so much more active, mentally, than others that his mind can swipe out of space the natural progressiveness of matters, and he really does not have to read or study?

What would you think of a man who decided to go into business and reasoned that, at the start, he would lay in enough goods to last as long as he continued in the business? Don't you suppose that the goods would get shelf-worn, behind the times and perhaps he would be out of some fine lines entirely before the final accounting arrived? Say, wouldn't you define such a party as a blamed crank?

Which brings us to one of the points that I wanted to mention. The other day I was talking with a man and I asked in a roundabout way whether he ever did any studying, "Say, kid," he answered, "I learned my trade when you was in the cradle and I know my business." Fell back upon his dignity at once, you see. It beats the band how much they attempt to make those words "learned my trade," cover. No one disputes, for a moment, that they learned the trade, the question being whether or not they have kept pace with the advances that the trade has made.

Here is an instance that occurs to the writer at this moment. Some years ago (in some places even to-day) it was the common practice to install the hot-water outfit in the kitchen with the water front connected to the range boiler at the side and bottom, the cold water admitted at the top of the boiler and the hot water also taken from the top of same boiler to the different fixtures in a single supply pipe. It generally worked all right, provided no traps or air pockets got in the way, and the owner finally would get some hot water after he had drawn off a considerable quantity of cold water that was in the line. Now there is a better way of piping these jobs, and it consists in making a circulation on the hot water system. How many plumbers can lay out a job of that kind and garantee that it will work before the work is done? Would you gamble a "saw buck" on the result, my friend? If you are not absolutely sure, you must begin to perceive that there is a difference between "learning your trade" and **knowing** it up-to-date.

Getting down to brass tacks, it may be stated that our craft has advanced, and if you do not know it the thing shows for itself that, although you may have "learned your trade" even so thoroughly, you have let it lope right away from you and that you are now in the bottom of the deck. If a shuffle of events should, by mischance, happen to bring you to the top and you were forced to tackle some of the most modern work, where would you land? What would you do? If you think that there are no such tin-types in the business as I have just mentioned, you have certainly got another guess coming; several guesses, in fact.

There is an old saying that "The mill will never grind again with the water that has passed." Old style water-power don't look good to a plumber nowadays anyhow. What's the matter, if this has made you see that you are not exactly up-to-date, with putting in a little time finding out just what they are doing in this 20th century? Perhaps you could learn a thing or two, although I well know, from past experience, that it is a mighty hard thing to convince a plumber or fitter of the fact.

Chicago. H. C.

THE PERSONAL ELEMENT IN THE PLUMBING BUSINESS.

You go into a store in order to make a purchase. Maybe you are going to buy a collar or a pair of shoes, perhaps some overalls or a nursing bottle for the baby. Just which article, doesn't make much difference with this story. Well, the clerk finally arrives on the scene, or perhaps has the goodness to turn around and face you after finishing conversation with a fellow clerk, and listens to your wants.

Are you going to buy at that store? You bet not. You will most probably remain just long enough to "peak your piece" and then go somewhere else. Now, if at the second store, the clerk comes forward and greets you pleasantly, shows an intelligent appreciation of your needs and endeavors to make it a personal duty to see that your orders are filled as you desire, you have a sense of gratitude within you; you cannot help it if you are normal. We see this personal interest developed to a much greater extent in other channels in business than in the plumbing business. In fact, this personal interest in the wants and needs of the customer, is one of the main things that is lacking with the rank and file of those who are in our line of business.

Why is it that when you go into certain stores that you prefer to have a certain clerk wait upon you? Sometimes you will wait quite a little time for him and refuse the assitance of the other clerks. "Why, that fellow knows just what I want," you say. Of course he does, for he has made your wants the subject of some thought and it has become a personal matter with him. Does this argument begin to filter into your cranium at last? "But these plumbing goods sell themselves," a guy in the front row remarks, as the light falls upon his bald head. How about those two lavatories in the window? They have been there three years now to my knowledge. If the plumber endeavored, to a greater extent, to fill the needs of the customer, rather than to work off the goods, there would be a better feeling toward our business. We just hump ourselves at times to make a sale, but we certainly do not pay enough attention to the personal needs or peculiarities of our customers.

ANOTHER POINT OF VIEW ANENT THE "PLUMBER'S SON" QUESTIONS.

Editor "Domestic Engineering":—In your March 14 issue you put some very live, practical questions and I'm surprised to see no one answer them. While I'm only about 20 years of age myself, I will try to answer them, for I have thought on this subject more, it appears, than a great many men who have boys of this age.

No. 1. I would reason with him that it was best to go into the shop, but leave the choice to him.

No. 2. No, for much of the so-called college education amounts to little, in fact the dangers and loss of valuable time to most boys are ruinous.

No. 3. Would advise him to stick to his trade five years, then consider trade-schools, believing if he has made the best of his time he would not go.

No. 4. No. Business colleges are too overstocked.

No. 5. I would advise him this would be the best course.

No. 6. I would put this question: "Where are the fathers; must they let their sons answer?"

"Michigan, My Michigan."

A PRACTICAL MANUAL OF STEAM & HOT-WATER HEATING

BY EDWARD RICHMOND PIERCE

In this installment Mr. Pierce explains how the expansion and contraction of water give action or circulation to the water in a heating system, whether the system be an open-tank or a sealed system. He also tells about the terrific force that can be developed by the constant application of heat to water in a sealed pipe.

SECTION XLI.

The plain fact of the matter of the circulation of hot-water through the pipes in an open-tank system can be fairly stated by saying that the same heat that expands water until it breaks into the steam which is driven by the pressure generated in the process through the pipes, when applied to pipes that are first filled with cold water which at some high point in the system is permitted to come into contact with the atmospheric pressure, expands the water nearly one-quarter of its bulk between the temperature points of 40 and 212 deg. And as water is not compressible to any extent, this expansion presents a moving force to the particles of water which eventually lifts them to the point of highest elevation, at which point each particle finds itself against the slight pressure created by the height of the column of expanded water in the pipe to the open air, which may be connected with the main pipe at that point. The particles of water in the main pipe itself have less power of resistance against the now slightly expanded water than is offered by the weight of water in the so-called expansion-tank, and the warm water follows the path of least resistance to the pipes that drop to the boiler; and here the careful observer finds that in the ordinary hot-water job when running at its rated capacity of 180 deg., at the boiler 160 deg., at the return, if he is to have proper circulation he must have a static or head-pressure greater at the foot of his return pipe than he has in the top of the boiler. In this there is no difference between steam and water jobs. It is at this point, and at this point only, that the difference in the weight of the ascending and descending columns of water cuts the greatest figure in the general question of hot-water circulation.

In a gravity steam job the only way that the water is returned to the boiler is by having the pressure of the return water at the point where it enters the boiler greater than the pressure of the steam on the water in the boiler. The difference in the average steam job of house-heating is 2 ounces per sq. in. greater at the bottom of the return pipe than the pressure on the bottom of the crown-sheet of the boiler.

In a well-proportioned hot-water job the difference in the pressure between the water on the crown-sheet of the boiler and on the bottom of the drop-pipe at the point where the pipe for the return enters the boiler, when the apparatus is working at the rated temperature of 180 deg. at the boiler, varies in accordance with the height of the ascending column of water and the length of the descending column coupled with the average temperature difference of the descending and ascending columns of water.

When the water contained in the system indicated by Fig. 24 is all of the same temperature there will be no circulation. It would make no difference whether the temperature of all the water was 40 deg. or 180 deg., the result would be the same, because so long as the temperature of the entire mass remains the same, the pressure at every point of the system bears the same relative relation to every other point. As soon as additional heat is applied to the bottom of receptacle B (which will represent the crown-sheet of a boiler the lowest part of the water in which is under the same head-pressure as the water in the bottom of the pipe P-4 when all the water is of the same temperature), the water immediately over the fire begins to absorb the increased heat and continues to absorb it until the expanding particles of water have received power enough to overcome the head-pressure on that bottom layer, if I can use such an expression in regard to water. These particles will in every case reach a temperature equal to the temperature of steam at the same pressure. In the case of Fig. 24 we have taken the height to be 34 ft. from crown-sheet to the top of pipe P-2. This height represents a pressure of 14.7 lb. due to the static head, or height of the column of water.

From table M-2, or any table of the properties of steam, one will find that this represents a pressure equal to that of the same amount as the atmosphere. In other words, of the atmosphere itself and another, or gage pressure, two atmospheres or an absolute pressure of 29.3 lb. The temperature of these particles at the moment of their overcoming the total pressure upon them will be, therefore, the same as that of steam at the same pressure, or 250 deg.

The weight of one cubic inch of these expanded particles would be 236 grains, while the weight of one cubic inch of the water in the return pipe at the point of its connecting with the boiler would be in accordance with the temperature of the whole body of water at the time the heat is applied, provided that there is no circulation yet in actual progress.

If that temperature be 62 deg., then the weight of one cubic inch will be 259 grains and the difference in the weight of one cubic inch is 23 grains, or about one-nineteenth of one ounce. This difference constantly diminishes as the contents of the two pipes approach each other in temperature. With the water in the supply pipe at 180 deg. at the boiler and 160 deg. at the return, the difference in the weight of one cubic inch will be about one-fortieth of an ounce as compared with the very bottom of the boiler, and about one-two-hundred-and-eighteenths of an ounce if compared with the weight of a cubic inch of water as it enters the supply pipe at 180 deg. If we compare the weight of one cubic foot of water at 180 deg. with the weight of a cubic foot at 160 deg. we find the

difference to be .43 lb. or a trifle less than 7 ounces. .01 of a lb. equals 70 grains. 437.5 grains in one ounce. We find that the weight of the water in 1 ft. of 3-in. pipe at 180 deg. will be 2.97 lb. and at 160 deg. will be 2.99 lb., a difference of .02 of a lb., or less than one-third of an ounce.

From the foregoing it is evident that there must be something besides the difference in the weight of the two columns of water that produces the circulation in a hot-water job. It will hardly be a competent reply to say that the height of the fall of the return water furnishes the motive power, it seems to me, although that is usually the offhand statement. If the pipe containing the water is tightly sealed, and heat is applied to the pipe at its lowest point, the pressure which would be created would be equal at every part, but the expansion of the particles of water would constantly grow less as they receded from the point where the heat was applied. To a great extent, that water at about 40 deg. is compressed to a point almost beyond the power of man to compress farther its particles. Apply heat in sufficient quantity and the particles increase in bulk, and of necessity crowd or press those that have not increased in bulk to the same degree. The greater the pressure on the particles to which the heat is applied, the greater the quantity of heat that must be applied to cause expansion and circulation.

The amount of heat that will raise the temperature of a cubic foot of water from 40 deg. to 212 deg. will expand it to 1.25 cu. ft. in size if exposed to the air. In gallons this means that approximately 8 gal. of water will swell to about 10 gal. The enormous power that is generated in this process and which is the prime cause of the circulation will be understood better, perhaps, if we notice what happens to 100 ft. in length of the iron-pipe that contains the water. Starting the heat when the water is at 40 deg. and continuing it until the whole body of water

TABLE M Z.

Velocity of water in pipes in feet per hour when the water leaves the radiator at 160 degrees and enters the radiator at various temperatures, from 161 degrees to 180 degrees, when the return drop is from 1 to 50 feet as indicated, no allowance being made for friction.

Water enters	161	165	170	175	180
Water leaves	160	160	160	160	160
Difference	1	5	10	15	20
Drop of Return in Ft.	**Feet Flow per Hour**	**Feet Flow per Hour**	**Feet Flow per Hour**	**Feet Flow per Hour**	**Feet Flow per Hour**
1	370	868	1199	1444	1714
5	824	1936	2678	3308	3816
10	1166	2740	3744	4636	5436
15	1429	3358	4644	5724	6624
20	1653	3744	5364	6588	7668
25	1843	4334	5976	7416	8568
30	2003	4752	6552	8100	9396
35	2192	5112	6804	8748	10152
40	2336	5472	7488	9324	10836
45	2477	5796	8028	9900	11520
50	2610	6120	8460	10440	12132

While this table is made with the return water as of 160 degrees there will be but a very slight difference at other temperatures usually required in hot water heating. For instance, if the entering water is at 220 degs. and the water as it leaves the radiator is at 210 degs. the difference in feet of flow per hour is only about 200 feet with no allowance for friction. To illustrate this and at the same time explain the method of producing the Table M Z: The weight of one cubic foot of water at 220 degs. is 59.64 lb. and a cubic foot at 210 weighs 59.82 lb. A difference of 18/100 of one pound.

Without an allowance for friction the velocity of drop per foot as produced by gravity is 32.16 feet, but it has the same to overcome in the rising column, therefore the two columns equal $32.16 \times 2 = 64.32$. The distance dropped is to be 10 feet; then $64.32 \times 10 = 643.20$. The difference in weight is .18 lb. more $643.20 \times .18 = 115.7760$. This must be divided by the total weight of one cubic foot of each column for both move at the same time. $59.82 + 59.64 = 119.46$ and the square root of the quotient from this division will be the velocity per second without any allowance for friction. $(115.7760 \div 119.46 = 0.969$, the square root of which is 0.984—ft. per second; 3600 seconds to the hour. $.984 \times 3600 = 3542$, feet per hour without allowance for friction. Table N Z under the difference of 10 degs. with the return water at 160 degs. gives the flow as 3744, a difference of 202 ft. in an hour, so small that it would not be of consequence.

Having found the velocity in feet that the water will move, the next thing is to find the cubic feet of water that will be required to supply various conditions that may arise. The manner of finding this out is clearly shown in Table N Z.

it is this expanding and contracting of the particles of the water that gives action or circulation to the water in the heating system, whether the system be an open-tank or a sealed system. The terrific force that can be developed by the constant application of heat to water in a sealed pipe is well known. At this point please bear in mind is at 212 deg., we find that the 100 ft. of iron pipe has been stretched in length about one and one-quarter inch. That is the power that produces the circulation, aided by the difference in weight.

(To be continued.)

MAKING ADVERTISING PAY.

By Slug Twenty-Three.

"It's no use, young fellow, no use," repeated the "Manager," aiming at the cuspidor and almost hitting it, in what for him was a well-directed shot. "No use, I tell you, I have tried advertising time and time again and it doesn't pay. Might as well take the money wasted that way and have a good time. No more advertising for me."

"Perhaps," suggested the solicitor, offering a cigar, and dropping into the chair pushed toward him, "perhaps, you did not get in right on the game; didn't have the right man to prepare your copy, and didn't tell a convincing story to the readers."

"Nothin' to it! Nothin' to it;" replied the advertiser, with a wave of his hand, banishing with one gesture the mere suggestion of such a possibility, "I know the advertisement was good because I prepared it myself, and I know this game, young fellow, know it from A to Izzard."

"Granted," was the reply, "nobody who knows you doubts but that you are a plumber in all that the word implies; but, in going into the advertising business you are leaving plumbing behind and trying to beat other men at their own game. Suppose an advertising man, flushed with his knowledge of advertising, undertook to run a plumbing business without knowing anything about it, you would not think much of his chances of success, would you? Yet, that very thing is what you are doing when you undertake to write, display and look after your own advertising, without some previous experience.

"And there you are in a nutshell. The failures to make advertising pay, if traced to their sources, would be found to originate in a lack of knowledge of how to advertise. Men, strong in their own particular field of usefulness, graduate to a manufacturing, jobbing or retailing business where one of the prime essentials to success is ability to write paying advertisements; instead of securing the services of some good advertising man, for the purpose, they try the game themselves, or assign it to some clerk, office-boy or stenographer to look after, with the result that their efforts spell Failure."

Only this week Mr. Lee Shubert, the well-known theatrical manager, in a magazine article tells of a venture almost wrecked by the star actor insisting on being the advertising manager for the enterprise.

He says, "Another of my stars at one time wrung from me a clause to the effect that he was to be allowed to design all his own paper, posters, hangers, cards and the like, and to write all his own advertising. This man disrupted my whole business-organization, and succeeded in driving away some of my most valuable employes. He is one of the best actors of the day; but,—oh, the posters he designed and the ads he wrote! He felt sure he was as good an artist as actor, and that as an adsmith he was superb. His work looked good to him and no amount of criticism could touch him."

So it is with all of us, when we step out of our own line and try to do the expert work of another, and it doesn't matter what line we investigate, or what publication we examine, we will find evidence of this failing in the stop gaps used to fill good valuable business-getting space.

Most advertisers believe when they have contracted for space and paid for it, they have done their duty and are "advertisers," no matter what kind of "dope" they run in the space. In this they are wholly wrong. An advertisement is a direct talk to a number of prospects, such as would be put up by a salesman in interviewing them separately. If a salesman were to go into a store with a lot of inane chatter without sense, rhyme or reason, or would keep repeating some near-catch lines, with "best," "biggest" and "only" as their leading features, how long would it be before the proprietor landed them in the street or handed them over to the police to be examined as to their sanity? Well, that is one of the things that advertisers do every day. They tell no story, do not show up their goods to the best advantage and then wonder why they don't get returns.

Another error of the average advertiser is to run a certain advertisement as long as the plates hold out. Fancy having come into your place of business, a salesman ninety or more times a year, and each time with a vacant expression on his face repeat mechanically the same line of talk. Wouldn't you lock the door every time you saw him coming? Well, that is exactly what happens when an advertiser runs his own advertisement without alteration or without change for a year or more.

If you want advertising returns, then, change your copy and change it frequently. There is no article placed on the market that has not lots of talking points if the trouble is taken to think them out. Once that is done, a set of advertisements can be prepared, which can be run in rotation.

Good copy and frequent changes are not matter of mere convenience and individual whim: they are duties owed by the advertiser to himself, to the publisher and to the other advertisers in the paper or magazine, and if I were a publisher, one of the conditions imposed on all applicants for space would be that their copy would come up to a certain standard and should be changed in a systematic manner. The time will come, no doubt, when progressive advertisers and publishers will insist on and bring about this very desirable end.

Strange point of view, isn't it, for the publisher and other advertisers to be interested in a person's copy and changes? Well, such is the state of affairs as you can very readily see. In the first place, if the copy is not good and changed with judicious frequency, the advertiser will not reap the benefits he expected and his business will suffer, not only the amount paid out for advertising but likewise the loss of prestige, due to the lack of business enterprise shown in his advertising. This, in turn, will affect the publisher, for not realizing that the lack of results is due to his own lack of knowledge of advertising, he will blame the paper which publishes his copy.

The publisher and other advertisers suffer jointly in another way. When advertising matter is well prepared and properly displayed, with frequent changes, the advertising section of the paper becomes as newsy and interesting as the reading portion and will be carefully read from cover to cover, by every subscriber, who is up to date. Necessarily, then, every person advertising in the paper will have his advertisement read, and will profit thereby, which benefit will reflect back to the publication itself. On the other hand, if the same old advertisements are run continuously, without change, until they are worn out, after glancing through the advertising section a few times, and finding that the advertisements are never changed, both busy men and idle ones will cast the paper aside, after looking through the reading portion, without even glancing at the advertisements. Consequently every advertiser in the paper, every reader of the paper, and the publishers themselves, will suffer.

The remedy is in the hands of you, the advertisers, and why not all start in the season with a resolution, conscientiously carried out, to prepare good live advertising for your space in "Domestic Enineering," and change the copy at least once a month. Try it for one year and see if you don't profit by increased business, and a better opinion of advertising, as an asset to your business.

IS DAMPER IN SMOKE-PIPE NECESSARY?

Editor "Domestic Engineering":—Will you kindly tell me if your practical man believes it necessary to have a damper in the smoke-pipe that may be controlled by hand? 60.

Those who have been at the installing end of the business for years all have their hobbies and this is one of the practical man's. It may be that it comes from the days when the draft controllers were less efficient than they are at this day, but the idea remains there all the same. This practical man prefers to see a hand-regulated damper in the smoke-pipe. He believes that there are days when the chimney draws much more freely than it does upon other days and, notwithstanding the automatic draft regulators may work all right, that the area of the smoke-pipe cut down as it may be by a hand-damper will be found quite beneficial.

There are, of course, some chimneys so built that the draft is poor. On such a chimney no damper should be placed in the smoke-pipe. In order to judge, you must be sure of the number of square inches in the smoke-pipe and the number of inches in the chimney. Strange as it may seem, not all fitters do this, and we have observed smoke-pipes that were 9-in. at the end connecting to the boiler drawn down to 7-in. at the end that entered the chimney. It is a dead sure cinch that such an installation will not draw properly. In other cases, we have seen a 9-in. smoke-pipe put to a chimney that was 4x12 in. on the inside. In other words, some 63 odd sq. in. in the smoke-pipe were required to draw into 48 in. in the chimney and then the fitter wondered why the boiler belched gas every time that the fire-pot door was opened. Look the job over thoroughly before you decide.

A COIL IN AN OLD-FASHIONED COOKING STOVE.

Editor "Domestic Engineering":—I have a plumbing job to install for a customer who has an old-fashioned cooking stove. She has had this relic for some 25 years. Now she utterly refuses to buy a modern range and says that a coil can be put in the fire-box and do the work all right, as she has seen it done in the houses of some of her relatives. What advice can you give me upon the subject?

More Than Anxious.

Many of these old landmarks to which you refer were never made for modern arrangements. By looking the stove over carefully, you can probably find the space in which to place the coil and we believe that you can heat the range-boiler with said coil. But there is another element entering into the problem, and that is, the coil may ruin the baking propensities of the oven and then the chances are that the housewife will call you to time for it.

We believe that we should tell her, frankly, that the stove would do the work, but that it might be at the expense of the oven, and that, while we could answer for the heating of the range-boiler, we would not be at all responsible for whatever bad effect that it might have upon the oven afterwards. If you do this and she still insists in using the old stove, regardless of all that you have said, you will have something to get back at her with if the oven fails to work. Try your best to get her to buy a modern range, but if she simply will not, then let her take her chances.

A LIGHTING PROPOSITION.

Editor "Domestic Engineering":—I am a plumber in a small country town, with no system of lighting or water-works. I have read your paper for some time and wish to ask what you would do under the same circumstances in order to bring about a more up-to-date state of affairs?

"Country Plumber."

If we did not have catalogs on gasoline and acetylene installations and on compressed-air systems of water-works, we would write for them at once. We would keep quiet until we had acquired all the information in the catalogs, and if that was not enough, we would buy some books and read up on the subject. Then we would be sure that we had the discounts all right and knew how to figure the jobs. Not until then would we attempt to start anything, but when we felt sure that we could talk properly upon the subject, we would plan a regular campaign. See the village authorities and explain to them just what the town needs and get them to talking and the rest of the people interested, in both the light and water systems. It will take time, a very little money and lots of patience, but you can get results if you proceed in this way and keep at it.

"WHAT IS A SANITARY ENGINEER?"

Editor "Domestic Engineering":—In your March 4th issue, you ask your readers to give you an answer to the question "What is a Sanitary Engineer?"

A sanitary engineer is capable of taking any building or set of buildings, village, town, or city, and designing a system of sewerage disposal, a water supply and a ventilation system that would be adequate, and furnishing those interested a figured estimate of the total cost of installing the system, according to his plans and blue prints.

He should have the ability to supervise the work of installing the system, and be able to do any part of the mechanical work himself, in case he had to demonstrate to a workman or sub-contractor that the work was faulty. In other words, he must be a practical man at the business, so as to know when inspecting work whether it is first-class or not.

He should be acquainted with all the best systems and practices of the day and know which is the best to adapt to the case in hand, and just what results will follow, before he advises or installs any system.

He should know sewerage and sewerage-disposal in all its forms; water supply, and how best to get it, and its suitability for the case in hand after it is obtained; ventilation is as important for him to be well versed in as the other two branches, so that he can adopt the best system.

Little Rock, Ark. A. J. Purcell.

RUNNING LEAD JOINTS.

Editor "Domestic Engineering":—Is it a good practice to make two pourings of lead when you are running a joint on cast-iron fittings? Some plumbers I have seen claim that it is all right to do so. Answer soon. J. C.

We believe that it is a better practice to make the joint at one pouring. If sufficient pains are taken in the matter of calking in the oakum, there will be left plenty of room for the lead, which should be poured in as rapidly as the position will permit and not have any slopping over. The joint should not be calked until the lead has had time to cool and here is where many plumbers make a mistake, as they calk the joint as soon as they can pick up their tools after pouring same. Two pourings of lead will not unite, as may be seen if the joint is pulled apart or broken open.

ON "BULL-HEADING THE TEE."

Editor "Domestic Engineering":—Where you are compelled to take two branches from one steam main at the extreme end of the line, is it proper to do so by "bull-heading" a tee and having the branches run in opposite directions? M. L. H.

We do not believe that this would be good practice. For one reason, it would make the job too rigid from the expansion point of view. For another reason, it would make it difficult to get a proper pitch on both of the branches and the strain that one would be liable to put on the pipes at the point of the tee would very likely result in its cracking, perhaps at the very first test of the heating-plant. Take off the first branch, continue the run for six inches or perhaps a foot and then make the turn, thus taking off the second branch.

WILL A 4-IN. MAIN DO THE WORK?

Editor "Domestic Engineering":—I have a job of steam-heating in which they are using 4,800 sq. ft. of direct radiation. The supply of steam comes from a boiler located in a power house 152 ft. from the building. They will carry a steam pressure of from 30 to 40 lb. on the boiler, and we will carry that pressure to the entrance of the building and have the work laid out with the 4-in. pipe from the boiler to the pressure-reducing valve, which will be 4x8. The water of condensation will be returned by separate drips and a separate pipe to the pump and receiver in the boiler-room. Please let us know if this size of pipe is suitable for the purpose.

J. W.

A subscriber in Toronto, Canada, sends us the above inquiry. He, however, neglected to give street address, and we publish question and answer in this issue with the hope that he may see it and obtain the information desired. We also trust that any of our readers who are interested will give their opinion on the subject.

According to recorded practice of some of the best engineers of the country, a practice which is corroborated by the many opinions of prominent heating engineers presented in our book "Size of Flow and Return Steam-Mains," it seems to be clearly established that 4-in. pipe is altogether too small and that the pipe-size should be at least 6-in. This answer is given on the basis of the scanty information supplied, and is subject to amendment according to other conditions prevailing. It should be remembered, however, by our correspondent that tables based on mains not exceeding 100 ft. in length and with pressure under 10 lb., give for a 4-in. main an average radiation of 1,971 sq. ft., the lowest being 1,500 and the highest 2,560 ft. It seems apparent, therefore, that the 4-in. pipe will not satisfactorily do the work desired.

A CONVENTION ECHO FROM MICHIGAN.

Editor "Domestic Engineering": Permit me to say that your write-up of the convention at Muskegon is the best that has ever been made of any of the conventions since the organization of the state association. It is a faithful portrayal of the proceedings and entertainment, and a literary product. I congratulate our association and also "Domestic Engineering" upon the completeness, conciseness and promptness of the article. Our association certainly is indebted to your efforts in the matter.

Howell, Mich. Chas. G. Jewett.

AN INTERESTING LETTER FROM AN AUSTRALIAN PLUMBER.

Editor "Domestic Engineering":—I am sending to you, under separate cover, the plumbing code of Melbourne, and the metropolitan area which is a distance of 10 miles around Melbourne City and includes Hawthorn, and many other cities.

The plan on the opposite page is a sample. Each tenement requires a plan which must be approved by the board. You either get a block plan from the board, design the drainage and send it in for approval, or draw the ground plan of the property and house, design the drainage and submit it for approval or the board will give you the plan designed by them and approved. This method insures a correct working plan. You will notice in the code many things in common with the American codes.

There is one criticism I will make in reference to our code, viz., on the licensing question. The issuing of working plumbers' licenses to journeymen and masters alike has done unlimited harm to the master plumbers here. Their standing is totally ignored by the board.

Any person can take the work and get a journeyman to do the "sanitary plumbing" part. The men who lay the drains have no license. There are many men in the plumbing trade here today who, prior to the sewerage system starting, worked in other trades. They had no previous experience of plumbing, but by attending a technical school at night time and practicing just the board's requirements, have been able to pass the board's test and get a license, which by no means constitutes them plumbers.

This has been the means of creating indifferent workmen, who cannot retain their employment in the genuine master plumbers' shops and consequently become laborers-only-men (piece-workers) which means, they never make anything like wages and are exempt from the wages' board decision, viz., freedom of contract to the builder, etc.

I may also state that a person need only pass the practical part and not the theoretical part of his examination and be granted a second-class license and allowed to do the same work as the one who has passed both the practical and theoretical parts and is granted a first-class license. So you can see what a farce the licensing question is as it now stands.

The plan shown is a block plan supplied by the board to u for 60 cents. We designed the drainage, submitted it for approval, and carried the job out accordingly.

Melbourne. James Marshall.

The Melbourne and Metropolitan Board of Works.

Litho No. 1555

Detail Plan No. 1555 *Drainage Plan No. 49899*

PLAN OF DRAINAGE

FOR

A.J England Tennyson St Sandringham (Owner)
R Marshall & Son 457 Burwood Rd Auburn (Agent)

MUNICIPALITY CITY OF HAWTHORN.

REFERENCE:

B.T. Boundary Trap	S.V. Stop Valve	E.V Eduet Vent
D.T. Disconnector Trap	S.T. Silt Trap	I.V Induct Vent
G.T. Gully Trap	C.I.P. Cast Iron Pipe	S.I V P. Soil Induct Vent Pipe
G.D.T. Gully Disconnector Trap	G.W.I.P. Galv. Wrought Iron Pipe	S.V P Soil Vent Pipe
G.I.T. Grease Interceptor Trap	S.P.D. Stoneware Pipe Drain	V.P. Ventilating Pipe
G.S.T. Gully Silt Trap	I.C. Inspection Chamber	M.F Mica Flap
R.T Reflux Trap	I.O. Inspection Opening	

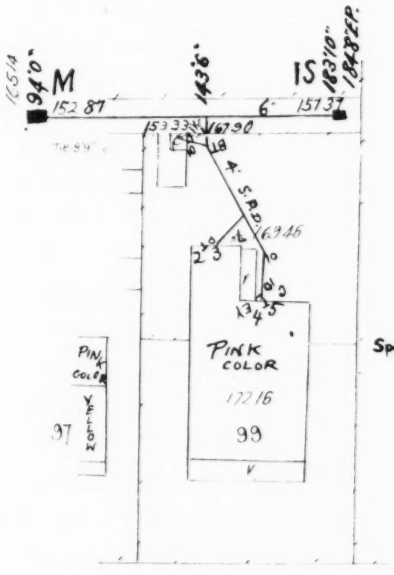
(See Sewerage By-Law No. 9

Scale—40 feet to 1 inch.

28. 10 05

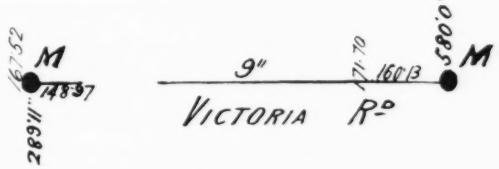
LOCATION=DIMENSIONS IN BLUE LETTERS

BALANCE OF LETTERING IN RED AND BLACK



LIST of FITTINGS

1 Closet external to be repaired
2 K Sink to be flushed
3 Troughs (3) ~ ~
4 Bath ~ ~
5 Lav Basin to be replaced by a new one
6 Top to be enclosed in Brickwork Cemented
Special Tap placed over same & Cement apron on Walls at rear
6 Yard Sink to be boiled



Examined, Block A K

16/10/05 Melbourne, 17/10/1905

Hopee
PLAN APPROVED
10 Wilson
-4-JAN-1906
Engineer

THE METAL MARKET

PIG-IRON PRODUCTION DECLINING.

The output of pig-iron during April was 2,065,000 tons, a decline of more than 100,000 tons compared with March. Furnaces in blast on May 1st were fewer by 19 than on March 1st. The daily rate of production was, on May 1st, 64,432 tons. The market has settled down and buyers are not making the attempts they were to secure price concessions. They take present quotations more as a matter of course and, while they are willing to buy as their needs dictate, they show no interest in the future of the market. The strike of the machinists in New York has made little or no difference in the pig-iron situation as yet. In the West, conditions are practically the same and the market can be said to be stagnant, although there seems to be a very fair demand for cast-iron pipe from many small western municipalities. This later in the year will undoubtedly lead to an improved demand for iron pipe and plumbers' fittings, as most of the cast-iron pipe is going into new waterworks construction. Quotations are as follows:

No. 2 Southern foundry, Birmingham	$11.00 to $11.50
No. 1 Northern foundry, New York	15.75 to 16.00
No. 2X Northern foundry, New York	15.25 to 15.50
No. 2 plain, Northern foundry, New York	15.00 to 15.25
No. 2 Northern foundry, Chicago	15.00

OLD IRON.

The market is extremely quiet and some sales can hardly be called legitimate transactions, as they are forced sales because the sellers are in urgent need of funds. Even on forced sales it is difficult to find purchasers. Quotations are as follows:

No. 1 yard wrought, long	$11.00 to $11.50
No. 1 yard wrought, short	10.00 to 10.50
Heavy-melting steel scrap	10.00 to 10.50
Machinery cast	11.50 to 12.00
Wrought pipes and tubes	10.00 to 10.50
Malleable castings	10.00 to 10.50
Wrought turnings	5.50 to 6.00
Cast borings	5.00 to 5.50
Stove plate	9.00 to 9.25
Light iron	5.00 to 5.50

COPPER MARKET SLOWING DOWN.

The copper market quickly dropped into its accustomed rut after the phenomenal business of a fortnight ago. Consumers have almost lost interest in the market and sellers seem fairly well satisfied that they have disposed of so large a tonnage. Quotations are practically without change, lake being obtainable at 12.30 cents, while electrolytic is selling at 12.10 cents.

PIG-TIN.

The market is very quiet and the fact that deliveries into consumption were only 3,300 tons, has excited a great deal of interest. It must be remembered, however, that the March deliveries were exceedingly large. Tin can now be obtained in New York at 42 cents in 5-ton lots.

LEAD.

The market is weak, but quotations are unchanged from last week, independent dealers offering lead at 4.42½ cents New York and 4.27½ cents St. Louis. The American Smelting & Refining Co. continues to quote shipment lead in 50-ton lots at 4.50 cents.

SPELTER.

A few sales have been reported and these are for small amounts. In New York spelter is selling at 5.50 cents and in St. Louis at 5.30 cents.

PITTSBURGH PENCILLINGS.

Some mighty fine weather has proved to be just what the plumbers in the Pittsburgh district wanted and needed to put a little life and vim into the business. The amount of repair work has increased nearly 100 per cent, and the architects are coming forward with plans for new buildings in larger volume than the trade anticipated. The backward spring almost worked havoc, it may be said, with the plumbers. Other trades of course suffered likewise. Great interest is being manifested in the trade here over the contracts to be given out anent the construction of two large hotels this year. Sanitary appliance salesmen have been keeping careful watch upon the situation, while the heating men have been a close second. Plumbers of course have been making repeated inquiries among those interested in these new buildings, with a view of being ready to get in on the ground floor at the proper time.

During the last week the following contracts have been announced in the plumbing and heating lines:

Pittsburgh.—The Reliance Heating Co. has secured the contract to install a steam-heating system in the new $40,000 business block and auditorium being erected by J. S. Murphy.

Johnstown.—The Johnstown Engineering Co. has the heating and plumbing work in the $30,000 bank building being erected by the United States National Bank.

Cannonsburg.—Henry Horton will do the plumbing in an $8,000 residence for John E. Fife.

Waynesburg.—The plumbing and heating in the $4,000 residence for William David goes to Lee Blair.

Monaca.—E. E. Stroul has been given the plumbing work in a $3,000 store-room building for Paul Mattauch.

Johnstown.—The Johnstown Supply Co. has the plumbing, heating and ventilating contract for two dwellings being built by Gerber Bros.

Pittsburgh.—The Pittsburgh Heating Co. secured the contract for heating the new store, offices and warehouses for the Union News Co., and work has been started.

Pittsburgh.—Architect Howard G. Frank, 519 Lewis Block, has plans ready for a new theatre to be built at Monongahela City, Pa., for John Anton, at a cost of $20,000.

Pittsburgh.—The Reliance Heating Co. has been awarded the contract for the hot-water system in the new $20,000 residence being built on Highland Ave. by W. O. Wright.

Munhall.—Charles Greiner has secured the plumbing contract in the $5,000 residence being erected by Fred C. Fridel.

Monessen.—The Monessen Plumbing Co. will do the work in the store, office and apartment building being erected by Miss Mary E. Jones.

Pittsburgh.—The Knoxville Plumbing Co. has the work in a $3,400 residence for Samuel Harrold, Knoxville.

Columbus, O.—An ordinance has been adopted by the city council providing for two additional plumbing inspectors, to be attached to the department of building. Since the enactment of the new building code, which contains a number of stringent provisions relative to plumbing and sewers, it has been found necessary to increase the staff of assistants in that department.

"Domestic Engineering" Cartoon on "The Menace of Overhead Expense."—No. XXXVIII.

OVER HEAD EXPENSES
JOHN IS CERTAINLY A GOOD PROVIDER. IT WONT TAKE MUCH LABOR TO GET ALL WE WANT
HERE CHILDREN, WE HAVE ABUNDANT MATERIAL FOR A GOOD FEAST
GOODY, GOODY.
"BIG CONTRACT" BRAND CUT-PRICE CHEESE
OY YOI YOI
M.D.S.
"DOMESTIC ENGINEERING"

Labor and Material Are There But It Looks as Though That Cat Will Spoil the Feast.

If you want to possess a special proof of this or any other of our cartoons, let us have your request at once. We have many applications for our cartoons for framing and want to take good care of all demands made.

OPENS PLUMBING SPECIALTY BUSINESS IN DETROIT.

James G. Umbaugh, who formerly conducted a plumbing business at 644 East 103rd St., Cleveland, O., has opened a plumbing specialty business at 862 Townsend St., Detroit, Mich.

WANTS CATALOGS OF TOOLS AND HEATING SUPPLIES.

The Miller-Sandy Machinery Co. has opened a machine-tool store at 1621-1623 Main St., Kansas City, Mo., and would like to receive catalogs of heating and ventilating supplies, boilers, engines, pumps, machine tools and machinists' supplies.

WELDON & KELLY CO. ADDS TO ITS LIGHTING FIXTURE TRADE EQUIPMENT.

Weldon & Kelly Co., Pittsburgh, Pa., will enter the lighting fixture and supply field on a greater scale than ever before, according to present plans. The firm, which operates this department in connection with its plumbing work, is credited with doing the largest lighting fixture business in the Pittsburgh district, and has just announced it has completed the purchase of the stock of gas and electric chandeliers, domes, shower lights, brackets, portables, bronzes, glassware fittings, supplies and shop equipment of the Pennsylvania Gas & Electric Fixture Co., the main offices of which have been in the Empire building.

ERECTING NEW OFFICE AND WAREHOUSE BUILDING.

The Welker Supply Co., formerly at 2234-2240 East Ninth Street, S. E., Cleveland, O., in the short time of two years has outgrown its present warehouse and has erected a new building which is to be used as a warehouse and office. The new building is located on the corner of Carnegie Ave. and E. 65th St., and is in the center of the busy east-end district and about three blocks from the Euclid Avenue Pennsylvania Co's. passenger and freight station. The building has 60 ft. front on Carnegie Ave. and 100 ft. depth. A large yard which will be used for storage purposes. Moving and settling in the new quarters will be effected not later than the 11th of May.

THE H. MUELLER MFG. CO. ENLARGING ITS PLANT AT DECATUR, ILL.

The H. Mueller Mfg. Co. is engaged in making quite a number of very important additions and extensions to its plant at Decatur, Ill., whereby it will gain much needed room and increase its facilities for turning out goods. An addition to the boiler room has been made consisting of a two-story brick-building 100 ft. square, which permits of a very notable increase in the power plant, and gives the company something over 1,000 h. p., practically doubling its power capacity. The foundry of the company is being concreted and machinery will be introduced which will greatly increase the output and at the same time materially lessen the labor connected with that department. A new galvanizing plant about 38x40 ft. and 35 ft. high is being built and the old building formerly used for that purpose will not be abandoned, the new building being necessary to take care of the firm's business. It will be strictly up to date. The work of putting in a complete sprinkler system is in progress and will give the company an additional safeguard against danger from fire.

THE FINAL MEETING OF THE SEASON OF THE ILLINOIS CHAPTER.

The Illinois Chapter of the American Society of Heating and Ventilating Engineers, celebrated the last meeting of the season by holding a Ladies' Night. The opening ceremony was a united attendance at the Studebaker Theater, to witness the first-night performance of "The Will-o'-the-Wisp." Everyone enjoyed it, according to his or her own capacity of appreciation of musical comedies in the first stages of their evolution. The main feature of it was the getting together of the members and their wives and the exchange of confidences between the acts.

After the theater, a dainty midnight supper was served in the Auditorium Annex in the Francis I. room. President Patterson presided, and Professor Hoffman was the chief guest of honor. It was a comfortable and delightful entertainment, and was not marred by "small-hour" speeches. Doubtless several of the members had rehearsed what they would have said if they had been called on. One of these undelivered speeches contained a reference to the coming time when the heating and ventilating industries will be so large, as a result of the growth of the Illinois Chapter, that all commercial transactions will be effected by exchange of heat units. A bushel of wheat will cost 25,000 h.u., and a man would have to hand out 5,060,000 h.u. to his wife weekly for pin-money. We are glad that this speech was not delivered, as we are weak on mathematics. Everybody was talking about the prospects for the summer meeting on the unbriny bosom of Lake Michigan. Seasick cures were exchanged freely, and everybody advised everybody else against eating pork on the first day.

The chapter will resume its monthly meetings in the fall. S. R. Lewis, Chairman of the Committee on Arrangements for the Ladies' Night, is to be congratulated on the carrying out of his plans without hitch. There were about 70 in attendance.

IN MEMORIAM—LUDWIG WOLFF.

At its last meeting the Chicago Master Plumbers' Association passed the following resolutions:

Whereas, The great Ruler of the Universe has removed from our midst a worthy friend and co-laborer, Ludwig Wolff, and

Whereas, The intimate relations held during many years of active business life with the members of the Chicago Master Plumbers' Association make it fitting that they should pay tribute to his sterling qualities. Therefore, be it

Resolved, That in Ludwig Wolff we recognize the master mind which evolved and made possible the great hygienic development of the plumbing industry through the construction and introduction of appliances which are now in use throughout the known world. Be it

Resolved, That although he gave to his business an untiring, enthusiastic devotion, he never failed to extend his kindliness in offering assistance to those who required it and ever gave the benefit of his broad experience to those who solicited his wise counsels—attributes indeed of a great soul and worthy of emulation by the youth of today. Be it

Resolved, That as a citizen he was honorable, public-spirited and patriotic; as a friend, loyal, sincere and true, and be it further

Resolved, That a copy of these resolutions be sent to the members of his family as an expression of our sentiments of condolence and sympathy.

James J. Wade,
Chairman.
Patrick Nacey,
David Whiteford.

After the adoption of these resolutions, Mr. Wade spoke as follows:

Mr. Chairman and Gentlemen:

"So part we sadly in this troublous world,
To meet with joy in sweet Jerusalem."

These words came to my mind with peculiar force when on the 14th day of April, 1911, I learned of the death of our esteemed friend, the Nestor of Chicago manufacturers, Ludwig Wolff. It is an honor, though replete with sadness, for me to be called upon to respond to the resolutions which you have just adopted. It was an hour of sorrow for all of us when we read that our friend and contemporary had been found in the sleep that knows no waking, and as we now dwell upon the memory of his rugged but peaceful features, there cannot but come to us the sad and truthful thought, there is nothing certain in life but death.

Leaves have their time to fall,
And flowers to wither at the north wind's breath,
And stars to set; but all,
Thou hast all seasons for thine own, O Death.

Ludwig Wolff was a good man and a good citizen, honored and respected by all who knew him. I personally knew him well, but because of knowing him so well, I would not indulge in fulsome eulogy on this occasion. He was a plain man who liked plain things. There was no superficiality about him. He was substantial. Manner and form did not attract him. His injunction today would be: Speak, if thou wilt, as thy heart speaketh.

Mr. Wolff was what we commonly term a self-made man. His life "in low estate began, and on a simple village green." He worked his way from the bottom to the top of the ladder of life, and by his own unaided efforts and perseverance forced himself to the front in his profession and into public esteem. While ambitious in a marked degree, he was never envious of the success of others.

The story of Ludwig Wolff's life might be well likened to the romantic tales culled from the struggles of the pioneers of our great city. He belonged to that class of men in this country throughout its history who have proven themselves to be the most useful—the men who have made themselves. He did not begin life under those favorable auspices which come to the rich. He was 18 years old when his father, Johann Wolff, a wagon-maker of Rostock, Mecklenburg, Germany, took his wife and seven children and started for America in 1854. St. Louis was his objective point, but they never reached that city. Mrs. Wolff and two of the children died in New York City. Johann Wolff was taken from the train to a hospital when he reached Chicago, where he died four days later, and Ludwig, the eldest, a stranger in a strange land, ignorant of the language, had the care of his four brothers and sisters placed upon his shoulders. With a determination which knew no such word as fail and with a persistency characteristic of the race from which he sprung, his life's work began. He started as a journeyman coppersmith at a wage of $7.50 per week and worked his way from poverty and obscurity as a young man until in middle life, flushed with the full vigor of manhood, he reached the zenith of success in his business. As I look back upon the days of his early struggles, I cannot help but ponder upon the characteristics of the man. When aroused he was sharp and aggressive in conflict; yet, the conflict being over, there remained no traces of resentment; the clouds and dust of contest were soon dispelled by his warm and sunny disposition, and his heart and hand were ready for his recent adversary. He was a zealous worker, earnest in every undertaking, devoting himself to the pursuits which lay before him; and, Mr. Chairman, in his death, this city has sustained a loss, because in this world each has his own work to do, and that work ceases when he dies. His home life had its sorrows in the early days, but for many, many years he was surrounded with all of the joys that bring happiness to mankind, and it is a matter of supreme satisfaction and contentment to all of us to know that he lived to that splendid age when the shoulders are bowed down with the burden of accumulated years and wintry hairs have drifted themselves over the temples of old age, and that when the end came, he was living in the expectancy of death—sitting by his hearthstone, as it were, and awaiting the coming of the grim messenger with the courage which marked his progress through life. The memory of the gladsome ways, the cheerful greetings, the kindly interest, his firm but gentle reasoning, and his friendly manner will long remain green and comforting in my heart.

And now, in conclusion, may I say to those who knew him best, who loved him most, and to his fond family who nourished and cherished him, as they leave the contemplation of his memory, they can carry with them the consoling reflection, "that while green grass will cover his grave, blue skies bend over it, sweet birds sing near it, and the grave will be hallowed ground; yet greener than the grass, fairer than the skies, sweeter than the birds, more hallowed than the grave itself, will be his fragrant memory enshrined with supreme sacredness in their heart of hearts."

COST AND DEPARTMENT SYSTEMS.

Feb. 8, 1911, J. Lee Nicholson, president American Cost Accounting Co., read an interesting paper on "Cost and Department Systems" before the Eastern Supply Association. Mr. Nicholson differentiated between the sciences of accounting and cost-finding. He said that accounting takes a total and determines the proportion of its elements, while cost-finding begins with the elements and determines the total. In other words, accounting is analytic and cost-finding is synthetic. Mr. Nicholson pointed out that there is no infallibly regulated system which must fit all cases alike. Cost-keeping is of fundamental importance. It must be remembered also that with decreased production, indirect expenses remain practically the same, but, being distributed over a lesser output, the cost of production is increased. In the neglect of this consideration lies the main weakness of many businesses. There are, perhaps, more mistakes made in applying indirect expenses than in any other element of distributing cost. The usual method of adding a fixed percentage is wrong in principle. The following paragraphs of Mr. Nicholson's address indicate clearly the line of argument maintained throughout his discourse:

"The elements that comprise the cost in all manufacturing enterprises are made up of three principal divisions: (1) Material. (2) Labor. (3) Indirect Expense.

"These divisions may then be subdivided as follows:

Material
(a) Direct. (b) Indirect.
Labor
(a) Direct. (b) Indirect.
Indirect Expense.

"Direct material is that element of material that enters into the product itself and can be charged accurately to the article. Indirect material consists of such material as factory supplies used in the processes but which do not enter into the product itself. These cannot be charged to any one article directly, but must be distributed over the number of articles affected by their use.

"Direct labor is limited to that labor which is actually expended on producing the article manufactured. All forms of labor, such as repairing, handling, supervising, etc., that are not engaged directly on the article itself, are designated as indirect labor. As in the case of indirect material, the expense of this non-productive labor is distributed over that part of the production that is indirectly affected by it.

"Indirect expense, together with indirect material and indirect labor, composes the last element of cost, which is sometimes called 'burden' and sometimes 'overhead,' and this large element of cost must be distributed accurately, by some known ratio, over the production, if correct costs are to be obtained.

"Indirect expenses, as a whole, consist of: (1) the indirect labor; (2) indirect material in the way of supplies; and (3) indirect expense, such as light, heat, power and maintenance, insurance, taxes, interest, rent, depreciation,

and, in short, any expense that does not enter into the product itself. These are divisible into two general classes, one of which can be apportioned to certain products or parts of products because they are incurred in a particular department of the factory. The other class consists of such expenses as are incurred for the benefit of the entire plant, and must be distributed over all departments on an equitable basis.

"The principles governing cost-finding are practically the same in every line of manufacturing industry, but the application of these principles in the devising of forms and methods to compile the data are different in each and every case, not only on account of the difference in the manufactured product and conditions of the plant, but also in the different methods used by the one who devises the system. The final result may be the same, but the method of arriving at the final result, if not the best method, is responsible for the term 'red tape' sometimes used in connection with cost-finding."

THE SPRING PIPE-THREADER AND CUTTER.

The Spring pipe-threader consists of a two-piece die, slidably mounted on ribs. Bearing against these ribs is a pressureplate with a coil-spring which is constantly in compression against it. Opposite the other end of these ribs is an opening through which to remove the dies by unscrewing the advancing handle.

To use this threader, the pipe to be threaded is passed through the guide in the usual way and the end placed almost even with the die. The advancing handle is then screwed up tight, this pinching the dies on the pipe, the strain being taken up by the spring.

The threader is now ready to be rotated and as the turn is made the teeth are constantly pinching and cutting their

The Spring Pipe-Threader.

way down to a full standard thread. In two revolutions it is claimed that the die will furnish a full standard thread.

The dies can be changed very quickly and without using any tool, and but one oiling is needed, as the oil has not time to run off. The cutting occurs so rapidly, the manufacturers say, that the pipe and dies have hardly time to heat or even rise in temperature, which saves the temper of the dies.

To cut close nipples, no nipple-holder is needed, as it is only necessary to reverse the dies on the ribs and cut the other end of the nipple with a left-handed motion, having partly cut the pipe through before threading the nipple, and, when threaded, break the nipple off.

The Spring pipe-threader is intended also to take the place of a ratchet stock and die, and by turning the threader one-fourth way back and forward several times, a full thread is made without having made a full revolution; this is very handy in corners or unhandy places.

In hot-water or steam-heating where a crooked thread is needed it is only necessary to remove the guide and pinch the die on at the desired angle as it will remain at the exact angle and produce the crooked thread desired and will not injure the die as is ordinarily the case, the spring saving the die.

In the larger sizes by feeding the advancing handle down more slowly, it is possible for one man to thread as large as 10-in. pipe by hand without any gears or ratchet.

The Spring pipe-cutter, which is very much the same as the Spring pipe-threader, is constructed similar to the Saunders or Barnes cutter, except that the head is pivoted in order that the advancing screw-handle may be screwed down tight at the start. It is self-feeding and it is claimed that it is possible to cut with it a piece of ¾-in. pipe in one revolution or 1-in. pipe in two revolutions, and

The Spring Pipe-Cutter.

the larger sizes proportionately quickly. The spring saves the cutter-wheel, as any hard spots in the pipe can have no effect on it owing to the yielding of the spring, neither does the cutter injure the pipe, as the strain cannot occur suddenly without a yielding of the spring. The threaders are made in six sizes and the cutters in eight sizes. Further details can be obtained from the manufacturers, The Spring Pipe Threader & Mfg. Co., 16 North Fourth St., St. Louis, Mo.

"THE HOME IMMACULATE."

"The Home Immaculate" is the title of a pleasing 16-page booklet published by the McCrum-Howell Co., New York City, in the interests of the "Richmond" vacuum-cleaning system. The McCrum-Howell people have determined to abolish the historical statement that "Man's work ends at set of sun, but woman's work is never done." We also remember a satirical rider attached to that to the effect that "it was only half-done." "Richmond" vacuum-cleaning has come to the rescue, and is intended to shorten the hours of labor and lengthen the years of enjoyment of the home-lady universal.

Plumbers throughout the country are realizing the opportunity for business in handling the vacuum-cleaning apparatus. Many of them have dabbled at it, by putting one or two of the machines in their windows, and are still sitting down and waiting for business. They have had a mistaken idea that vacuum-cleaning machinery has a phonograph-attachment, by means of which is would announce its own advantages to passers-by. That is not so. Vacuum-cleaning machinery has to be sold, and the best way to learn how to sell it is to read literature of the character of this little booklet, and use its arguments and the points of vantage to good effect in dealing with prospective customers. No salesman is so good that he cannot profit by reading how the other fellow talks. You can obtain copy upon application to the McCrum-Howell Co.

The company made an exhibit at the recent "Real Estate and Ideal Home Show" held at Madison Square Garden, New York City, the closing week in April. A little "No. 11" machine, specially designed for residence use, was the center of interested and admiring attention throughout the show. The hose connected to this plant is attached on either side to a glass chamber, enabling the spectators to see the objects lifted from the floor and flash by on their way to the receiving-tank. Long shreds of cloth, copper pennies, and other articles vanished as though by magic

when the small nozzle attached to the end of the hose approached them.

The "Richmond" portable suction-cleaner also attracted a great deal of attention, owing to its compact lightness and evident cleaning power. All its parts are made of metal; it has no valves or diaphragm, and under normal conditions does not require a hose attachment. Special literature concerning these machines can also be obtained for the asking. Mention "Domestic Engieering" when you write for booklet and catalog.

THE GROWTH OF THE LEADER IRON WORKS.

Some towns and cities add prestige to the products made in them. On the other hand, certain products bring towns and cities into prominence which would otherwise have but a limited circle of recognition. Milwaukee and Dayton are well-known, and one cannot utter either of these

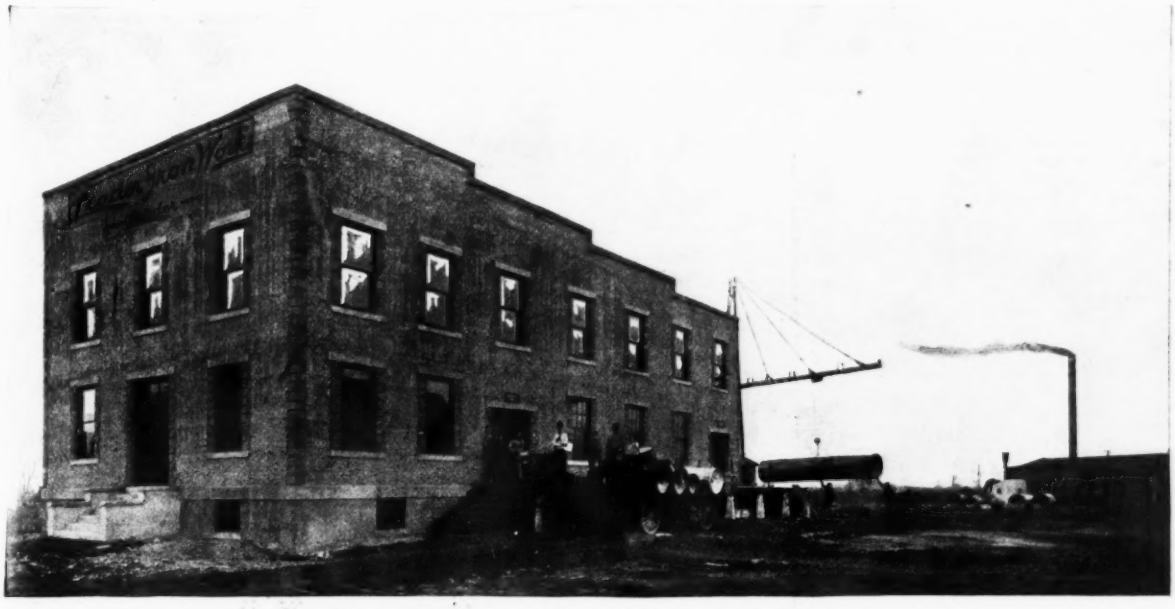
View of General Office of the Leader Iron Works.

Office Force of the Leader Iron Works.

names without thinking of the main product associated with it. Decatur, Ill., is receiving similar notoriety through the aggressive business enterprise of the Leader Iron Works. The Leader water-supply systems are known from Dan to Beersheba, speaking in an allegorical and geographical sense. Decatur claims to be the coming metropolis of the corn-belt, but the Leader products will beat the corn in the race and promise to make Decatur world-famous.

The success of the Leader organization is a striking example of what can be accomplished in commercial fields by manufacturing a product whose main qualifications are utility, quality and efficiency of service. The apparatus manufactured by the company supplies an ever-growing demand. Leader water-supply systems are not patented, and increase of business is expected and obtained wholly upon the satisfaction given to the user. The field of operation for the company's commercial efforts is enormous. Modern magazines, trade journals and newspapers have trained the present generation to believe that domestic life without an effective water supply is not domestic LIFE. Even the farmer's helper expects running water to wash his hands in the stable. He considers it an injustice to have to tote the old oaken bucket from the well to the kitchen. The sons and daughters of the country-folks, returning from visiting their city cousins, want city conveniences, and the principal of these is a continual supply of water upon demand.

Greenhouses, chicken farms, stock stables, country clubs, amusement places—all the operators of these realize the benefit of an effective, abundant water-supply, and the



The New Office Building of the Leader Iron Works, Decatur, Ill.

Leader Iron Works is catering to this growing demand. At its plant a huge addition has been built to the tank-shop, and the great pumping-house, with towering chimney, is nearing completion. Since its conception, the business of the Leader Iron Works has steadily increased, and this has been due to an active and aggressive personnel.

The officers of the company are: President, Wm. A. Shorb; vice-president and manager, T. E. O'Brien; secretary and treasurer, A. G. O'Neill; sales-manager, L. M. O'Neill; advertising manager, W. E. Marquam.

The company has offices in the principal cities of the United States, the head of the eastern division of the company's business being L. F. Beers, Owego, N. Y. S. A. Brown is manager of the New York City office, and R. C. Burmood is manager of the Chicago office. The company has issued a most interesting booklet on Leader water-supply systems, entitled "The Question of Water," full of valuable information, which contains many ideas of how to obtain water-supply business. Plumbers desirous of reaching the country trade effectively, can profit by reading this booklet, which can be obtained upon request.

THE AMERICAN DIRECT FLUSH-VALVE.

Direct flush-valves take their supply right from the water-pipe and they thus do away with the closet-tank, the ball-cock, the chain, etc. As a rule such valves must have a larger source of water supply because they have no special supply stored up in closet-tanks, and it is generally stated that the supply pipe in such cases must be at least 1¼-in. in diameter. Here is where the American Valve Co., of Indianapolis, is of the opinion that it has produced something of interest to the trade in the American Direct flush-valve, shown herewith, as it will work on a 1-in. supply, if the pressure is constantly above 30 lb. The makers state that this it not the only feature of the American Valve which will interest the plumbing trade, and they enumerate the following: Its working parts are outside and away from the water, thus eliminating all possibility of corrosion; the length of the flush is governed by a small set-screw in the handle, supplies plenty of water for a sanitary cleansing of the bowl, and more, if necessary or wanted, although there is no need of wasting water,—and the janitor or owner can save the price of the fixture many times over by carefully adjusting and timing the flush. It will work on a pressure of 5 lb. or more, and it can be installed to advantage in a suburban home with its individual water system or in tall buildings, as 8 or 80 ft. below the supply tank is said to be all the same to this valve. Each valve is equipped with its own cut-off, and this cuts out all hunting in the cellar for a rusty and forgotten cut-off besides leaving only one closet out of commission when changes or repairs are being made. Flush-pipe, unions and gaskets are furnished with the valve and cut-off, and the bowl and seat completes the closet combination. Master plumbers are invited to write the manufacturers, the American Valve Co., Indianapolis, Ind., for complete information. When doing so, kindly mention that "Domestic Engineering" gave you the tip.

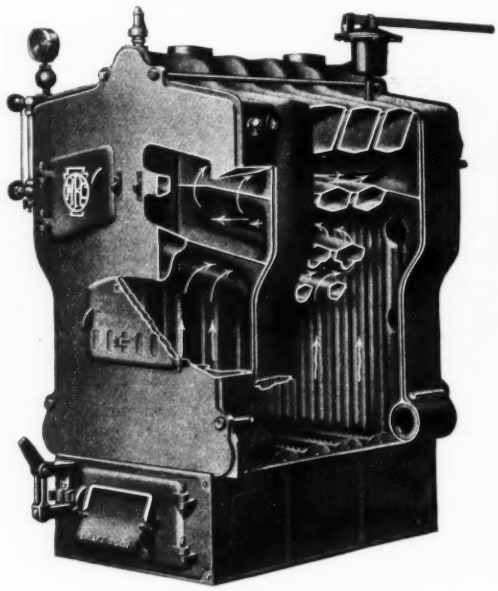
American Flush-Valve.

The Plumbers' Fixture Manufacturing Co., Cleveland, O., has been incorporated, with an authorized capital of $10,000, to manufacture and sell sanitary plumbing specialties and fixtures. The incorporators are: W. H. Dettlebach, W. J. Bergens, E. P. Strong, Walter McMahon and J. Grohs.

A NEW WILLIAMSPORT BOILER.

The illustration shown herewith gives the reader a very good idea of the construction of the new 22-in. push nipple boiler which has just been placed on the market by the Williamsport Radiator Co., Williamsport, Pa.; 99 Beekman St., New York City; and 1415 Commonwealth Bldg., Philadelphia, Pa. Readers of "Domestic Engineering" will recall that this company has in the past few months been strongly advertising its 15-in. push nipple boiler, and will readily see the similarity of the two boilers.

The capacities of the new boiler are from 600 to 1,400 ft. in steam and from 1,000 to 2,400 ft. in hot-water, and by exhaustive tests at the factory the company is ready



The New Williamsport Boiler.

to garantee that these ratings are conservative. The special features combined in this boiler are: the semi-horizontal construction, allowing of rapid internal circulation of the water in the sections, thus insuring against priming in the boiler; the deep corrugations in the fire-pot; the thin waterways; and the lobes of the lower tubes extending to a considerable distance, thus exposing to the direct radiant heat of the fire a larger proportion of direct fire surface, it is claimed, than any other boiler on the market. Large flues permit of the absorption of a maximum number of heat units from the slowly moving gases. The grates are of the rocking and dumping style, and are built for long service. The greatest care is used in the construction of all parts of this boiler and particularly to the reaming of the sections and the fitting of the nipples, so that the boiler is tight yet very easy to erect, and it is thought on this account that it will appeal particularly to fitters.

A new catalog is ready for distribution by the manufacturers and may be had on request from any one of the above addresses.

"KEYSTONE" BUSINESS.

The Judd-Winslow Co., Muskegon, Mich., reports booming business. "Keystone" seats are increasing in public favor. They were specified for the Canton Christian College, Hong hook, Canton, China, and the shipment is helping to ballast some good ships headed that way at the present time. The John Weekes & Son Co., large jobbers of plumbing supplies at Watertown, N. Y., secured the order for the sanitary equipment. E. C. B. Judd is busy cornering the eastern orders and E. De Forest Winslow is mowing down the western commercial crops. Meanwhile the factory is running full blast and the able superintendent wears the smile ineradicable.

May 16, 1911.—Annual meeting of the West Virginia State Association of Master Plumbers, at Morgantown, W. Va. The officers of the association are: President, E. C. Wiedebusch, Morgantown; secretary, L. W. Joseph, Morgantown.

May 22, 1911.—The annual convention of the Tennessee State Association of Master Plumbers at Nashville. The officers of the state association are: President, J. W. Martin, Chattanooga; secretary-treasurer, R. O. Carlin, 816 Georgia Ave., Chattanooga.

May 29 and 30, 1911.—The 14th annual convention of the Colorado Master Plumbers' Association, at Denver, Colo. This association is composed of master plumbers in Colorado, New Mexico, Utah and Wyoming and its officers are: President, Chris Irving, Denver, Colo.; vice-president, Henry Green, Salt Lake City; treasurer, Peter E. Snow, Denver; secretary, Chas. A. Dehn, 414 Chamber of Commerce Bldg., Denver, Colo.

May 29, 30, 31 and June 1, 1911.—The 23rd annual convention of the National Association of Master Steam and Hot-Water Fitters, at Hotel Sherman, Chicago. The officers of the association are: President, Charles A. Geoghegan, New York City; vice-president, Edward B. Denny, Newark, N. J.; treasurer, Juan A. Almirall, New York City; secretary, Henry B. Gombers, 260 West Broadway, New York City.

June 6, 7 and 8, 1911.—Third annual meeting of the National District Heating Association, at Pittsburgh, Pa., headquarters Fort Pitt Hotel. The officers of the association are: President, Geo. W. Wright, Baltimore, Md.; first vice-president, A. D. Spencer, Detroit, Mich.; second vice-president, W. J. Grams, Seattle, Wash.; third vice-president, Warren Partridge, Springfield, Ill.; secretary-treasurer, D. L. Gaskill, Greenville, O.

June 9 and 10, 1911.—Annual convention of the Associated Master Plumbers of Texas, at Galveston. Headquarters will be established at the Tremont Hotel and and the convention sessions will be held in the Scottish Rite Cathedral. The convention will open at 9 a. m. June 9th. The officers of the association are: President, Joseph Netzer, Laredo; vice-president, J. P. Sheehan, Dallas; secretary, J. C. Netzer, Laredo; treasurer, N. S. Hill, Waco.

June 13, 14 and 15, 1911.—The 29th annual convention of the National Association of Master Plumbers of the United States, at Galveston, Tex., with headquarters at the Tremont Hotel. The officers of the association are: President, A. Selden Walker, East Orange, N. J., vice-president, Alfred C. Eynon, Canton, O.; secretary, Samuel F. Wilson, East Orange, N. J.; treasurer, Wm. McCoach, Philadelphia, Pa.

ALABAMA MASTER PLUMBERS HOLD ANNUAL CONVENTION.

The Alabama State Association of Master Plumbers met this year in Birmingham on May 2d and 3d, for its annual gathering. The business sessions were held in the Knights of Columbus hall, on Third Ave. The attention of the delegates, of whom about 50 were in attendance from all parts of the state, was not, however, exclusively devoted to business. After the routine matters were disposed of, adjournment was taken to visit the ball game, and in the evening the delegates and their ladies attended the Bijou theatre. On Wednesday the convention enjoyed a day's outing at West Lake, near Bessemer, where a barbecue dinner was served. The banquet at the Hotel Florence Wednesday night closed the proceedings. The election of officers resulted as follows: President, Chris Bailey, Montgomery; vice-president, Hamilton Hines, Birmingham; treasurer, W. W. Wilson, Ensley. The appointment of the secretary is left to the president.

NEW YORK STATE AND ALBANY DELEGATES TO GALVESTON.

John H. Moran, Albany, N. Y., president of the New York State Association, and B. Joseph O'Donnell, Syracuse, N. Y., national state vice-president, will represent New York State at the Master Plumbers' Convention in Galveston. The Master Plumbers' Association of Albany has just elected the following delegates: Thomas F. Nolan, president (ex-officio), Frank F. Schimpf, Albion Eckert, T. E. Kerwin, John E. Dugan; alternates: James H. Doody, William Miller, David H. Walsh and Joseph O. Stapf.

PITTSBURGH MASTER PLUMBERS APPRECIATE SECRETARY E. M. TATE'S WORK.

When the members of the Pittsburgh Master Plumbers' Association read the first report of the Johnstown convention in the April 29th issue of "Domestic Engineering," they began to realize what a jewel of an organization-worker they possess in Secretary E. M. Tate. It will be remembered that the state association was a unit in the thought that Mr. Tate would be a happy man to be named by Pres. S. S. White as secretary of the state association. Immediately there was a howl from the Pittsburgh fellows, who wanted Mr. Tate for themselves. All realized what a hard worker the Pittsburgh secretary is, and it was the desire of the convention to pay the Pittsburgher the highest compliment they could. Mr. Tate appreciated this effort, and the master plumbers of Pittsburgh, including President White, appreciate the work of Mr. Tate, both in behalf of the Pittsburgh local and the state association.

CESSPOOLS AND THEIR RELATION TO HEALTH

The caption is the title of a leaflet issued by the Sanitary Utilities Co., 2358 Jamaica Ave., Richmond Hill, New York City. It takes the ax to the privy vault, excommunicates the disease-carrying house-fly and pronounces a justifiable benediction on the company's cesspool. This is of sectional-block construction, accommodating it to any dimensions desired, and can be erected with ordinary labor at low cost. Now if you are interested, write to the company for its literature and tell them we told you.

"FLIES AND MOSQUITOES AS CARRIERS OF DISEASE."

This is the title of a pamphlet in which is reprinted an article on this subject by Wm. Paul Gerhard, C. E., published in the "Country Gentleman." Mr. Gerhard is a well-known sanitarian, and has made a special study of causes of infection. The article is effectively written, and points out in a practical way methods of control and extermination of flies and mosquitoes. Copy of the article can be obtained from Wm. Paul Gerhard, C. E., 39 Strong Place, Brooklyn, N. Y., for 25 cents, postpaid.

"ENCYCLOPEDIA OF MUNICIPAL AND SANITARY ENGINEERING."

An ambitious attempt to supply sanitarians with an encyclopedia devoted only to the matters in which they are interested, is to be noted in the "Encyclopedia of Municipal and Sanitary Engineering" published by the D. Van Nostrand Co., New York City, at a net price of $10. Its authors are Wm. H. Maxwell, past president of the Institute of Sanitary Engineers, and J. D. Brown, editor of "The Sanitary Record." The articles are clearly written, appropriately illustrated where desirable and, naturally, contain many British references. This is not a disadvantage, in that in many cases, especially in the matter of sewage treatment, in Europe the methods are well worthy of consideration for the purpose of comparison with our own. Sanitary engineers, architects, contractors, and those engaged in sanitary work of importance, will find this new volume a valuable addition to their sanitary literature. The encyclopedia can be obtained either from the publishers or the Book Department of "Domestic Engineering," 443 S. Dearborn St., at the price quoted.

NEW ENGLAND NOTES.

Massachusetts.

Boston.—The Vacuum Ventilating Co. was one of the losers in a fire which did $25,000 damage to the building at 419-429 Atlantic Ave. a few days ago.

Rockland.—John Warsaw, of Abington, has been appointed inspector of plumbing for Rockland, an office recently created by the board of health.

Uxbridge.—Dr. G. T. Little, who recently purchased the Ruth Farnum house on Oak St., has placed a contract for installing modern plumbing in the structure with E. G. Conant.

Pittsfield.—Fred Armsby, formerly of this city, has gone into the plumbing and tinsmithing business at Lebanon Springs, N. Y.

Marlboro.—George R. Hall & Co. are unusually busy just at present. They are doing plumbing work in Charles McGee's residence on Russell St.; in Henry Donahue's house on Winter St.; and in a house owned by the Marlboro Building Association on Hudson St.

Clinton.—An examination of applicants for the position of plumbing inspectors of Clinton has been ordered for May 24th by the civil service commissioners. Only male citizens who have resided in Clinton six months are eligible. The vacancy is due to the resignation of C. C. Crowley. The applicants will be examined in training and experience, letter-writing, arithmetic and handwriting, and knowledge of sanitary plumbing.

Springfield.—The contracts for heating and plumbing at the Summer Avenue school have been awarded by the city property committee, the former to Wyckoff & Lloyd and the latter to J. J. Cotter. The contract price for the heating is $7,400 and for the plumbing $4,467.

Fitchburg.—Judgment for the plaintiff in the case of the Jennison Plumbing Co. vs. August Fournier, an action to recover $115.62 for material furnished the defendant, has been entered in the local court.

Pittsfield.—Edward L. Bruhn & Co. have started in the plumbing, steam-fitting, tinning and gas-fitting business and are erecting a building at 59 Hawthorn ave. Mr. Bruhn has been connected with the Pittsfield Gas Co. for six years and has had much experience in the business in which he now engages.

New Hampshire.

Berlin.—Moffet & Riva, plumbers, are soon to have new quarters in the Tucker block on Main street, where they will have more room and better facilities for caring for their business.

Antrim.—George W. Hunt has contracts in hand for installing heating plants in the residences of Mrs. N. C. Jameson and E. E. Smith at Alabama Farm. Mrs. Jameson is also having a bath-room installed and Mr. Hunt is doing the work.

Connecticut.

Plainville.—The Plainville Hardware Co., which has just been organized, has purchased the hardware and plumbing business of E. S. Freeman & Co., making the deal with the executor of the estate, Oscar Anderson. Those interested in the new concern are W. J. Dent, M. A. Norton, F. S. Spencer and E. S. Prior.

Middletown.—Ellsworth Burr has brought suit against the Middletown Plumbing & Heating Co. for $2,500 which he claims is due on wages.

Maine.

Bar Harbor.—L. P. Carter is putting in new plumbing in the residence of H. I. Sewall at Arcadia Landing. The contract calls for an entire new bath-room, an extra tub and an extra lavatory.

Bangor.—The use of dynamite to knock down the ruins of the recent conflagration resulted in considerable damage to the establishments of the Leighton & Davenport Plumbing Co., and Haynes & Chalmers, hardware dealers and plumbers, both of whom had barely escaped the fire. The reverberation of the dynamite broke plate glass windows and did other damage.

Vermont.

Cambridge.—S. E. Pope has a contract for installing two bath-rooms and a new range and boiler for Ira Powell. He also has a contract for a complete bath-room and other work for E. G. Nealy, of Underhill.

Reading.—Winnifred Shedd has opened a new plumbing establishment.

Rhode Island.

Providence.—City Engineer Clapp was the guest of the Providence Master Plumbers at their last meeting and described at length the sewage precipitation plant at Fields Point. Another guest who gave an interesting address was Principal George F. Weston, of the technical high school. He explained the work of the school, especially as regards instruction in plumbing and allied trades. The committee in charge of the meeting consisted of C. P. Brennan, John J. Shanley, John F. Keenan and Thomas J. Tierney.

MILWAUKEE AND WISCONSIN NEWS.

Milwaukee.

The building of the W. A. Bowers Heating Co., 482-84 East Water St., narrowly escaped destruction by fire recently when oily rags caused spontaneous compustion. The blaze was in the basement and was difficult to fight, but the damage was not extensive.

Edward Roth, who has been working at the plumbing trade in Milwaukee for several years, has opened a shop of his own at 434 22d Ave.

The Socialist members of the Wisconsin Legislature recently caused considerable amusement by claiming that the graduates of the Milwaukee School of Trades in plumbing and in other lines should be termed as "scabs," on the grounds that no union would admit them to its ranks. Work will soon begin on the erection of a new $125,000 building to replace the structure of the Milwaukee School of Trades destroyed by fire last fall.

Wegner Bros. have been awarded the contract for doing the heating work on the new fire-engine house at Teutonia avenue and Locust street, at $625.

Several public-comfort stations will be erected this year, the first one to be located on the Sixth street viaduct, plans for which have now been completed by Superintendent of Buildings Klug. The city budget provides $5,000 to begin the work of establishing the stations. Stations will be erected at the court-house, basement of the city hall, public library, West Side natatorium, Juneau Park and other public places.

Mayor Emil Seidel has given official assurance that the report of the Menominee sewerage commission, involving an estimated expenditure of nearly $6,000,000, is not being held up by the city administration. The report that the matter was being delayed aroused considerable public discussion and the Federation of Civic Clubs passed a resolution demanding an explanation from the administration. It is expected that the sewage-disposal question will be so extensive that special legislation by the state will be necessary to carry it through. The members of the sewage commission who prepared the report included John W. Alvord, Chicago; George C. Whipple, New York; Harrison P. Eddy, Boston.

From Other Wisconsin Cities.

Eau Claire.—Several Wisconsin cities have started an agitation for more sanitary plumbing and it is expected that the present year will see many cities establishing plumbers' commissions in accordance with the provisions of the existing state law which allows this procedure. The common council of this city has been considering the proposition for some time and is about ready to take action. The council will create the commission and appoint the members, who will conduct examinations and award licenses to the city plumbers.

Fort Atkinson.—The plumbing firm of Kammer & Gebhardt has been dissolved by mutual consent. It is understood that Mr. Gebhardt will re-enter the plumbing business.

Rhinelander.—George J. Meekma and Louis R. Adams, of Racine, have purchased the plumbing business of R. G. Lowell.

Jefferson.—Clarence Puerner, who has been conducting a plumbing, heating and gas-fitting business here, has formed a partnership with John S. Bienfang, one of his employes.

Fond du Lac.—The Wisconsin Telephone Co. has awarded the plumbing, gas-fitting and heating contracts on its new $85,000 building to the Ahern-McCoy Co. The building will be two stories high, of concrete construction and absolutely fireproof. The Ahern-McCoy Co. has also been awarded the contract for the plumbing and heating on the new armory building.

Eau Claire.—Shattuck & Hussey, architects, Chicago, have completed plans for a new Y. M. C. A. building. The structure will consist of four stories and high basement. The plumbing contract has not yet been awarded.

Merrill.—The Merrill Plumbing & Heating Co. has secured the heating contract on the county jail and sheriff's residence at Merrill, at $2,835. F. A. Eagle, Merrill, has been awarded the plumbing contract at $3,335.

La Crosse.—The La Crosse Plumbing Supply Co. will soon be located in larger quarters in the Strupp building, 212-218 South Front St.

Oshkosh.—The Builders and Traders' Exchange has petitioned the common council to elect J. E. Mallery to the office of building and plumbing inspector.

NEWS FROM OHIO.

Akron, O.—An appropriation of $6,000 has been made for a public-comfort station in this city.

Cleveland, O.—The contract for the plumbing in the $40,000 apartment building at the corner of 79th and Hough St., has been awarded to Mower Bros. of this city. The architects are Huberty, Summerell and Gilman.

Cleveland, O.—The Kedlecek Plumbing & Heating Co. has been awarded the plumbing contract in the business and residence block being erected at 1409 Denison Ave., in this city. Architects Huberty, Summerell and Gilman made the plans for this building.

FLORIDA MASTER PLUMBERS' CONVENTION.

The Florida Master Plumbers' Association held its annual convention at St. Petersburg, Fla., on Wednesday, April 12. Taking into consideration the association's limited membership, the convention was well attended, more than 30 per cent. of its total membership being in attendance. The regular routine business was transacted, and topics of interest to the plumbing trade in the State were thoroughly discussed. A most interesting photograph of the delegates, taken at the convention, is shown herewith.

Delegates Attending Florida Master Plumbers' Convention at St. Petersburg, Fla.

INSTALLING SANITARY DRINKING FOUNTAINS.

The Board of Education, of New York City, has taken a firm stand against the common drinking cup. C. B. J. Snyder, Superintendent of School Buildings, has ordered The Springfield Sanitary Drinking Fountain Co.'s products installed. John Hall, jr., of Chicopee, Mass., manager of the Springfield company, superintended the installation of these attractive sanitary drinking fountains in the high schools. The work is already completed in the beautiful Erasmus Hall High School in Brooklyn, where Doctor Walter B. Gunnison, principal, and the other educators, express themselves as delighted with these fountains. The Eastern District High School in Brooklyn has also eight of them installed. This is perhaps one of the finest and largest schools of its kind in the country. The Springfield Drinking Fountain Co.'s men are also working in the Sturtevant High School and the High School of Commerce in New York City.

Champaign, Ill.—Swearingen & Apperson is the name of a new plumbing firm which has opened an up-to-date establishment in the Hartford Bldg., on West Main street.

PACIFIC COAST LETTER

San Francisco.

Great interest is being expressed here in the announcement of the directors of the Panama-Pacific International Exposition that a site for the fair is to be chosen within the next ten days. While there is a large amount of building now going on here, it is realized that this will be greatly increased as soon as it is definitely known just where the fair will be located. It is the intention to have ground broken as soon as possible and it will be but a few months before active work on some of the exposition structures will be begun. Just now there is a large amount of hotel work being done here and this is calling for much high grade plumbing. It is now announced that the temporary City Hall building, which is in course of erection on Market street, near Eighth, will be used for hotel purposes when the city is ready to move into a structure of its own. With this in view, a double system of plumbing is to be installed, making the contract a large one. Frank J. Klimm has been awarded the contract for this work on his bid of $75,000. An eight-story hotel building is now in course of construction at Kearney and Sutter streets and a large four-story building is being made ready on Kearney street, near California.

The Board of Supervisors has at last acted on the question of the removal of temporary buildings erected in this city following the fire, and owners of these are being advised that all buildings of this character within the fire-limits must be demolished. At first two years' time was allowed for these but this was extended year by year until almost five years have passed. It is considered by the board that this has been ample time for all to have secured permanent structures for the carrying-on of business, and the shacks have been ordered torn down. The unoccupied buildings will be razed first, followed by those that are considered unsanitary, and lastly the sanitary temporary buildings will receive attention. It is estimated that about 90 per cent of these buildings, of which there are still 698 within the fire-limits, will be removed within 12 months.

The John G. Sutton Co., the well known sanitary and heating engineering firm, has taken out a permit for the erection of its shop and warehouse building on Minna street, near Third. This will be a two-story brick structure and will cost about $25,000.

The Municipal Light, Power & Heat Corporation has been incorporated here with a capital stock of $5,000,000 by P. S. Scales, Frank Harrold, E. D. Sullivan, W. H. Gorrill and Rudolph Spreckels. This concern already operates a plant, which is to be enlarged, and later steam heat is to be supplied to a restricted district.

The Pacific Blower & Heating Co., which makes a specialty of out-of-town work, is planning to establish a branch at Oakland and has already secured quarters there.

An appropriation of $103,000 has been made by the Board of Supervisors for the construction of shop buildings and for the plumbing, heating and ventilating work at the new Polytechnic High-School. The shop equipment of this institution will be of high order.

Work is progressing rapidly on the repairing of the Rialto Building, New Montgomery and Mission streets, this being the last of the burned out class A structures to be put into shape again. The rough plumbing and heating work is now being done.

Boscus Bros., the plumbers, who own property at Fourth and Howard streets, are considering the proposition of erecting a four-story and basement hotel building there.

Work on the Examiner building at Third and Market streets is progressing rapidly and most of the rough plumbing is now in place. The contract for the installation of the vacuum-cleaning plant has just been let to the Vacuum Engineering Co. on its bid of $2,195. This building is to be 26 stories in height when completed, but only 12 stories will be finished at present.

The use of oil-burning apparatus on the engines of the State Belt Line railroad at San Francisco has been so satisfactory that crude oil will be used in place of coal at the Ferry building and elsewhere in state heating and power plants.

Francis J. Baker and Edward J. Kinney, of the George H. Tay Co., are in Los Angeles this week assisting in planning the extensions that are to be made in the facilities of that concern in southern California.

The fire committee of the board of supervisors of this city has agreed to recommend for passage an ordinance designed to make it unlawful to use crude-oil for fuel in places where an attendant is not present constantly. Some property owners are complaining that the result of the ordinance, if passed, will be to force them to abandon the use of their heating furnaces and to buy heat from firms operating central heating stations.

The Royal Heating Co. has contracted to install the heating system in the four-story building now in course of erection on Kearney street, just off California, by Hyman Bros. Co. The consideration mentioned is $1,340.

Bids are being invited for the plumbing and heating work in the Polytechnic high school. Other bids being invited by the board of public works are for the installation of the vacuum-cleaning system, the plumbing, and the heating and ventilating work in the John Swett school, and the plumbing of Engine House No. 43 on Brazil avenue, Excelsior district.

F. W. Henderson, sales manager of the United States Radiator Corporation, of Detroit, Mich., is making a brief stay in this city.

The heating and ventilating work in the new clubhouse of the Burlingame Country Club at San Mateo, Cal., is to be done by John G. Sutton & Co., of San Francisco, for a price slightly over $4,000. The plumbing work will be done by W. S. Snook & Son.

Oakland, Cal.—Within a short time work will commence on the laying of an extensive sewer system in the outlying sections. Work has been planned that will cost almost $500,000, and about 70 miles of sewers will be laid.

Oakland, Cal.—Bids will be received during the p esent month for the plumbing, heating and ventilating of the new $1,000,000 city hall. Many San Francisco firms will submit figures on this work.

Stockton, Cal.—Walsh & Miller have been awarded the contract for the installation of the plumbing system in the new three-story building to be erected by Fred Rothenbush.

Salem, Ore.—F. J. Page has made application for a franchise to lay underground pipes for the distribution of heat from a central heating station.

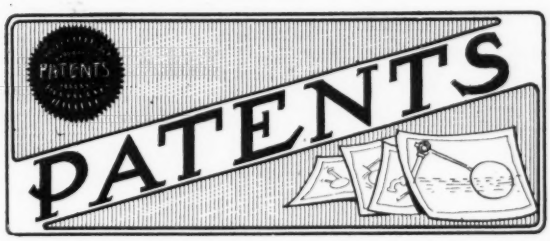
Boise, Idaho.—The Carlson-Lusk Hardware Co., of this city, has secured the contract for the installation of an up-to-date plumbing system in the Washington Hotel at Weiser, Idaho. The contract amounts to $12,000.

Spirit Lake, Idaho.—G. W. Cope has sold his stock of plumbing goods to W. E. McKinney and closed out his plumbing business here

SUMMER SCHOOL OF ENGINEERING AT THE UNIVERSITY OF WISCONSIN.

The eleventh annual session of the Summer School of Engineering, under the direction of the College of Engineering of the University of Wisconsin, opens June 26th, continuing for six weeks. Regular and advanced courses are offered in direct and alternating currents, hydraulics, machine design, descriptive geometry, applied mechanics, shop work, steam and gas engineering and surveying. Elementary courses adapted to the requirement of those not having preparation for the advanced work are offered in mechanical drawing, machine design and shop work, in addition to which opportunity is offered for laboratory work in the electrical, steam and gas laboratories for those who have had power plant experience or correspondence instruction.

The teaching staff is taken from the regular instructional force, and all laboratory equipment of the Engineering College is available for students. For bulletin or further information address F. E. Turneaure, Dean, College of Engineering, Madison, Wis.



985,766.—Chain Pipe-Wrench. George Amborn, New York, N. Y., assignor to J. H. Williams & Co., Brooklyn, N. Y., a corporation of New York. In a reversible chain pipe wrench or the like, the combination of a double-ended reversible jaw, a handle and a chain, and means for pivoting said chain, so that it may be moved to either side of the jaw, said means being displaced rearwardly from the middle point of the jaws and permitting said chain to be used on either side of the wrench.

985,782.—Flushing-Tank. Sheldon E. Cook, Lincoln, Nebr. In a flushing tank, the combination with a safety float, of a support for the same, a valve, rods for guiding the float, a second float adapted to act upon the valve when the valve stem is elevated, an outlet pipe, means for regulating and controlling the floats, and a guide within the outlet pipe in which the valve stem plays.

985,787.—Combined Heater and Boiler. Peter A. Deasy, Oakland, Cal., assignor to Columbia Combination Boiler and Heater Co., a corporation of California.

985,853.—Bath-Tub Supply-Pipe Connection. William G. Stewart, Cleveland, Ohio, assignor to H. Mueller Manufacturing Co., Decatur, Ill., a corporation of Illinois. The combination with a bath tub having an aperture in an end wall thereof, a supply pipe having a threaded end projecting through said aperture and into the tub, said supply pipe having a detachable joint adjacent the aperture, a flange within the tub engaging the supply outside of the aperture, a well within the flange, a shank adapted to slidably engage the well and means therein for engaging the supply, and a clamping member on the exterior of the tub independent of the supply for holding the fitting in position.

985,952.—Flushing Apparatus For Water-Closets. Robert Stickdorn, Dusseldorf, Germany.

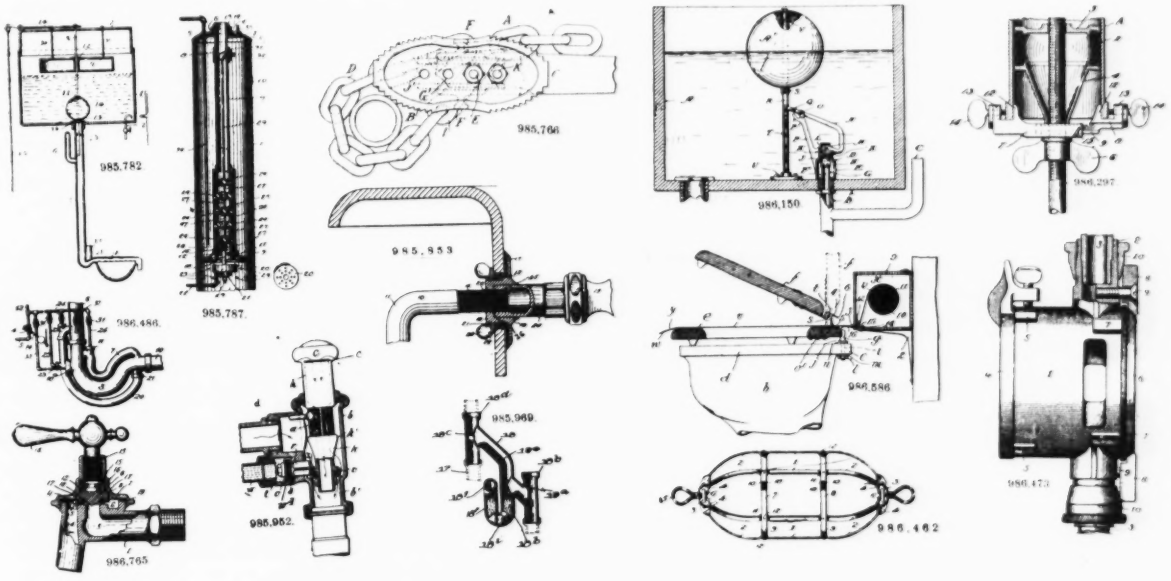
985,969.—Plumbing System And Fitting Therefor. George Beckway, Chicago, Ill. In a plumbing system comprising vertical waste and main vent pipes, a plumber's fitting comprising a section of pipe straight throughout adapted to form a portion of the waste pipe, a section of pipe straight throughout adapted to form a portion of the main vent pipe, an upwardly and outwardly inclined branch communicating at its lower extremity with the said section of waste pipe and at its upper extremity with the section of main vent pipe, and a trap secured to the said branch connecting the said pipe sections, both said branch and said trap lying within the plane of the waste and main vent pipes.

986,150.—Flushing-Tank. Robert G. Elliott, Peoria, Ill. The combination with a flushing tank and an inlet valve, of a float to control the latter arranged to have a limited vertical movement at substantially the highest level of the water, a lever having the float at one end and the valve at the other, and a support for that end of the lever having the float.

986,268.—Pipe-Cleaner. William Colina and Malcolm McLain Reid, Waterbury, Conn. A pipe cleaner comprising a flexible torsional cleaning member, and a handle adjustable along the length of the member, having a spring clamp arranged to bindingly engage the latter.

986,297.—Soil-Pipe-Testing Plug. Bryant B. Kinkade, Berkeley, Cal.

986,473.—Die-Stock. William H. Leaver, Chicago, Ill., assignor to Nye Tool and Machine Works, a corporation of Illinois. In a die-stock, the combination of a head or body provided with a series of radial die jaws and a radial socket sleeve for the attachment of a handle, a circularly adjustable cam plate arranged at one end of said head and adapted to impart simultaneous radial adjustment to the die jaws, a clamp lever pivoted to the head with its inner end bearing upon the cam plate, and a revoluble wedge sleeve screwing upon the periphery of the handle socket with its inner wedge portion in operative engagement with the outer end of the clamp lever, the abutting portions of the clamp lever and cam plate being beveled to hold the lever from a turning displacement.



986,486.—Water-Closet. Isaac C. Miller and David F. Hott, Cincinnati, O. In a water-closet, a trap therefor having a plurality of supplemental traps of less diameter connected therewith and opening thereinto at opposite ends, and a drain pipe opening from one of said supplemental traps into another of said supplemental traps.

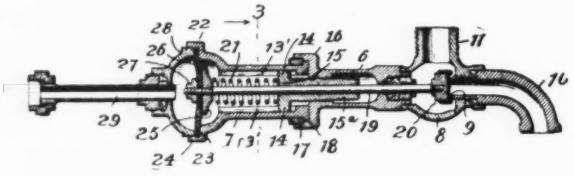
986,765.—Valve. Conrad C. Schoeneck and Ivar F. Warme, Syracuse, N. Y.

986,586.—Water-Closet. James Morrison, Montreal, Quebec, Canada.

986,462.—Sewer-Cleaner. John M. Holdaway, Provo, Utah.

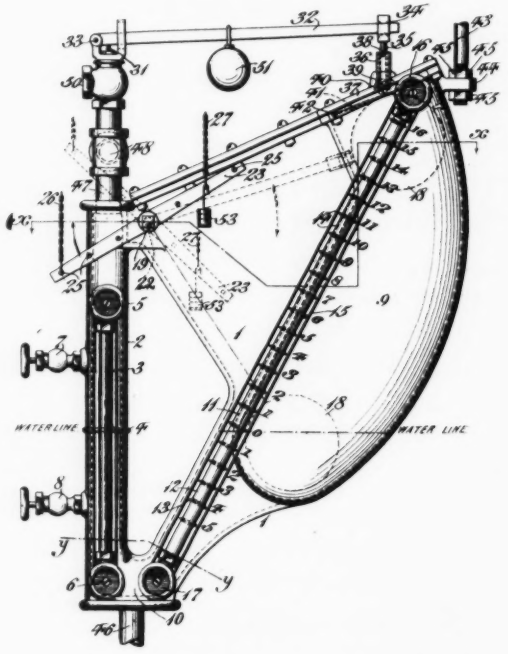
983,101. Fluid-Pressure Governor. Mathew J. Weber, Columbus, Ohio, assignor to the Ohio Pump & Brass Co., Columbus, O. In a governor of the character described, the combination of a stationary casing member having internal screw threads and provided with an internal threaded enlargement, a revoluble casing member having inter-

nal longitudinal grooves, a threaded sleeve to screw into the stationary casing member and provided with a head within the revoluble casing member, said head having projections movable in the grooves in said revoluble casing member, an annular nut surrounding the revoluble casing member and screwing into the threaded enlargement on the stationary casing member to prevent relative longitudinal movement of said casing members, a rod passing through the casing members and provided at one end



with a valve, a flexible diaphragm located in the revoluble casing member and secured to the other end of the valve rod, and a spring disposed between said diaphragm and the head on the threaded sleeve.

987,125. Combined Water, Vacuum and Pressure-Gage, Automatic Regulator, and Safety Device. William T. Fowden, Third St. and Concord Ave., Chester, Pa. This device was invented principally for the operation of drafts on heating boilers, for either vapor, vacuum or low-pressure, up to one-half pound, and it will operate both the back and front draft-doors, on a variation of about one-half ounce pressure. It will fit on any type or size of boiler. Assuming that the regulator is to be employed in connection with atmospheric vapor, or vacuum-heating systems, the operation of same is as follows: The water is filled in the boiler, until the water reaches a point indicated at 4, in the water column. Before starting a fire the connection 27 is connected with the draft door 28, the other means for controlling the draft or combustion. When connection 26 is connected with damper 29, which controls the exit of the products of combustion from the furnace, the draft-door at this time is opened, and the flue damper will also be opened, or check-draft closed, whichever the case may be. After the fire is started, and the pressure increases, it will displace the water in the chamber casing 9 and the float 18 will be raised, and owing to the manner in which it is operatively connected with the lever 23, such lever will be rocked, thereby actuating connections 26 and 27, and the draft door 28 will be closed, and the damper 29 will be closed and check draft opened, as the case may be. When the pressure begins to lower the above description will be reversed, and at the same time the water will hold, except with a very slight variation, the same water-level as above, on account of the pressure through the conduit 48 being equalized by the pressure through the conduit at 46 in connection with the boiler. The reason the water will rise in the casing, 9, is owing to the space around the vent, at piston 45, which allows the air to escape to the atmosphere. If the pressure in the boiler increases, the water will still continue to expand, in the casing, and the float, which is a hollow copper ball, will be raised until it reaches the bottom of the piston, or the member 41, and this will cause the piston 35 to raise the controlling lever and safety valve as connected with the piston 35, and as soon as the float comes in contact with the piston, the piston will rise, the result of which will be that the washer on the end of the piston will close the lever end of the cylinder, 36, and prevent any escape of water from the chamber; at the same time the controlling lever 32 will be raised, thereby allowing the safety valve to open and the steam to escape. In case the water should fall in the boiler below the division between the two chambers at 10, the vapor or steam will pass out around the piston or valve at 35, to the atmosphere, thereby acting as a tell-tale or indicator at any time, whether there be any pressure on the boiler, and should there be any pressure the water in the bottom of the boiler will raise the float even under these conditions and close the damper, and should the float 18 for any reason become detached from the rod, it would float up in the same manner as if it was attached and coming



into contact with the piston, or valve 35, the controlling lever, would be raised, thereby removing any excess in pressure to be relieved, so that under all conditions arising in practice a safety device is provided which is automatically actuated. The vacuum-indicator can be changed by placing the regulator either above or below the water line, by increasing or shortening the length of the conduit 46 and 47, as is apparent.

TOMORROW a man will call on you asking you about THE AMERICAN FLUSH VALVE (we know he will come, we sent him a letter telling him that he could get one from his plumber).

ARE YOU HIS PLUMBER?

The American Direct Flush valve has overcome all the difficulties heretofore experienced with fixtures of this character. It will work and work all the time, to your credit and profit.

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